RELATIONSHIPS BETWEEN JOB SATISFACTION, WORK ENGAGEMENT, AND TURNOVER INTENTION OF HEALTH SCIENCE TEACHERS

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The purpose of this research was to investigate the relationships between job satisfaction, work engagement, and turnover intention of health science teachers in the state of Texas. The healthcare profession is one of the largest growing occupations in the U.S. nationwide. The job growth outlook for healthcare professionals is projected to be on average 34% between 2014 and 2024. Despite the growing healthcare job categories, there is a shortage of healthcare professionals in the U.S. This study addressed the shortage of health science teachers in secondary education. Considering the importance of healthcare, especially with an aging U.S. population, it is critical to study the impact of work engagement and job satisfaction on teacher intent to leave the health science teaching profession. Through a correlational survey research design it was found that job satisfaction and work engagement are negatively related to turnover intention. Hierarchical regression analysis indicated that job satisfaction accounted for 39.6% of the variation in turnover intention. Findings also showed that work engagement did not moderate the relationship between job satisfaction and turnover intention. Implications for research and practice are discussed and conclusions are provided.
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By

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CHAPTER 1
INTRODUCTION

The healthcare profession is one of the largest growing occupations in the United States (U.S. Bureau of Labor Statistics, [BLS], 2015). Of the top 20 fastest growing job categories, 11 of these are in the healthcare field, including nurse practitioners and physicians assistants. Nationwide, the job growth outlook for healthcare professionals is projected to be on average, 34%, between 2014 and 2024 (BLS, 2015).

Despite the growing healthcare job categories, there is a shortage of healthcare professionals in the United States (Rowe, Fulmer, & Fried, 2016). The national average is 236 physicians for every 100,000 Americans. However, the situation is further compounded when examining the ratio of healthcare providers to Texans where there is a chronic shortage of healthcare professionals (Texas Medical Association, TMA, 2016). According to the TMA (2016), there are approximately 186 physicians for every 100,000 Texans. There are 28 counties of the 254 in the state of Texas without physicians (Rowe et al., 2016). Adding to the complexity of the healthcare professional shortage in Texas is that the fastest growing career area is the healthcare profession, with a job growth rate of 32% by 2018 (Advance CTE, 2017). Recently, the Texas legislature passed a law allowing Austin Community College to provide the bachelor degree for nursing to combat the shortage that already exists (Texas Legislature, 2017). However, in a Career and Technical Education (CTE) report it was emphasized that there is a chronic teacher shortage affecting both secondary and postsecondary education in Science, Technology, Engineering, and Math (STEM) and the Health Sciences in general (NASDCTE/NCTEF, 2012). Students are prepared for a number of health related careers in CTE health science programs (Texas Agency Education, TEA, 2017). Students may earn
certifications in the healthcare professions of certified nurse aide, pharmacy technician, emergency medical technician, dental assistant, and phlebotomy (TEA, 2017). This deficit of health science teachers will negatively influence the workforce needs of the health sector as well as the health of the nation.

About 25% of new teachers in the United States leave the teaching profession before their third year (Skaalvik & Skaalvik, 2011). The Education Commission of the United States reported that teacher attrition is the highest among teachers that have been in the classroom less than five years (Cochran & Reese, 2007). Studies indicate that teachers leave their jobs for many reasons including job satisfaction, work obligations, work stressors, administration, and the work environment (Arnup & Bowles, 2016; You & Conley, 2015; Skaalvik & Skaalvik, 2011; Weiqi, 2007; Kim & Loadman, 1994). Lack of job satisfaction can cause a decrease in work engagement often leading to turnover intention (Skaalvik & Skaalvik, 2011). Job satisfaction provides an overall feeling of job well-being (Moè, Pazzaglia, & Ronconi, 2010), and higher levels of commitment and involvement on the job (Weiqi, 2007).

Other factors influencing teacher turnover or intent to leave include instructional support within the confines of the school (Skaalvik & Skaalvik, 2014). Instructional support includes administration support, efficient classroom and laboratory facilities, equipment, supplies, and mentors (Joerger & Bremer, 2001; Ruhland, 2001; Ruhland & Bremer, 2003; Song, Martens, McCharen, & Ausburn, 2011; Skaalvik & Skaalvik, 2014). Adequate instructional support can boost teachers’ engagement levels in the classroom. Other support areas that teachers need for successful engagement in the workplace are the administrative support of CTE programs, parents of the students, the community, and the family of the teacher. Without support mechanisms, stress and burnout become a component of every day that the teacher is in the classroom.
Teachers that are engaged in the teaching profession dedicate time and energy to their teaching, view teaching as important, and concentrate intensely on the tasks performed every day (Klassen, Aldhafri, Mansfield, Purwanto, Siu, Wong, & Woods-McConney, 2012). Teachers who are engaged are less likely to leave the profession (Hakanen, Bakker, & Schaufeli, 2006).

Support mechanisms were also found to be factors that contributed to health science teacher retention (Clarke, 2012). When teachers do not have a positive, supportive learning environment, they leave the profession (Song et al., 2011). The turnover rate for teachers is higher in the teaching profession than any other profession in the United States, which makes it difficult to keep good teachers in the classroom (Ingersoll, 2001).

If individuals who are more satisfied and engaged at work demonstrate a less likely tendency to leave the job, then it is important to examine the satisfaction and engagement levels of teachers in the health science sector as a way to improve teacher retention. This is also important considering a shortage of workers in the health sciences and the projections of increasing job growth in this field, as well as the significance of the contribution of these workers to the healthcare and well-being of the state of Texas and the nation.

Statement of the Problem

The October 2012 report of Career and Technical Education (CTE) trends by the National Association of State Directors of Career and Technical Education (NASDCTE), now known as Advance CTE, reported in their key findings that high CTE teacher shortages affect both secondary and postsecondary education STEM and Health Science clusters. The vision of the CTE leaders is written in an article called Putting Learner Success First: A Shared Vision for the Future of CTE (Advance CTE, 2017). Within the vision statements is a promise to share
exceptional practices in recruiting the most highly qualified, highly skilled industry experts into
the classroom, including policies for supporting credit for prior learning (Advance CTE, 2017).
The vision of the CTE leaders in this organization includes the recruitment of health science
teachers, and supporting the shortage of healthcare professionals by increasing interest at the
secondary education level in the United States.

Nationally, the 2016–2017 Teacher Shortage Areas Nationwide Listing compiled by the
United States Department of Education - Office of Postsecondary Education, included CTE in
the states of Arizona, Hawaii, Idaho, Kentucky, New Jersey, New York, Pennsylvania, Rhode
data-driven 2015 CTE snapshots explaining how CTE works for the economy. Projection fact
sheets were created relating to the growth of industries grouped by career clusters for each state.
There are 21 states, including Texas, that list the Health Science Career Cluster as the fastest job
growth area, with at least 15% to upwards of 46% growth by 2018.

One of the answers to address the healthcare professional shortage is the secondary CTE
program called the Health Science Career Cluster. The Association for Career and Technical
Education (Advance CTE, 2017), defines CTE as “education that prepares both youth and adults
for a wide range of career and further educational opportunities” (p. 1). CTE plays a major role
in preparing individuals for jobs in health related occupations. Within the career cluster, high
school students have the opportunity to enroll in courses such as health science, microbiology,
anatomy and physiology, and mental health preparing the students for careers in healthcare such
as nursing, medical laboratory scientists, and mental health therapists.

The Texas Center for Nursing Workforce Studies (2013) created by the Texas
Legislature, found that the shortage of full-time registered nurses will increase to 70,000 by
2020. Other healthcare professional areas, including the licensed professional counselor (LPC), are in serious shortage. In 2013, there were 18,641 licensed professional counselors (LPCs) in Texas. The numbers provided a ratio of LPCs to the population of 1:1,430, again demonstrating the need for healthcare professionals within the state (Texas Legislative Report, 2017). The results of these healthcare shortages can be devastating to the future of Texas and the entire United States.

In Texas, the health science profession is the fastest growing career cluster area, with job growth of 32% by 2018 (Advance CTE, 2017). With an astounding growth rate of 32% in the healthcare professions, additional CTE teachers are needed in the health science classrooms across the state to increase the interest in this career cluster. Texas was the focus of this study because of the growing concern of the lack of future healthcare professionals within the state (Texas Medical Association, 2014). According to a report by the Texas State Data Center (2012), the Texas population could reach approximately 45 million by 2040. Texas has more than 5.7 million baby boomers who are eligible for Medicare (Texas Medical Association, 2014). The Affordable Care Act of 2010 provides insurance coverage for 2.2 million people that were uninsured, straining the physician and healthcare professional population (Texas Medical Association, 2014).

The Health Science Career Cluster is one of the clusters that many public education administrators are interested in developing at their school district; however, there is a shortage of health science teachers (Franklin, 2015). To be eligible to teach in the Health Science Career Cluster the Texas Administrative Code (TAC §233.14) states, “the candidate must hold at least an associate’s degree from an accredited institution, have a current licensure, registration or certification from a nationally recognized accrediting agency, and have two-years full-time
employment under that licensure, registration or certification”. Military candidates may not need the licensure, and the TEA, through teacher certification programs, approves all candidates. The candidate must also enroll in certification courses and pass the exams associated with the certification (TAC §233.14). With so many requirements, some candidates hesitate to choose this career path.

Furthermore, the Texas Essential Knowledge and Skills (TEKS) for CTE course recently underwent revision with the State Board of Education, secondary and postsecondary teachers, business and industry leaders, and the TEA staff. The TEKS review committees revised and added courses to each of the career clusters, under the direction of the State Board of Education. The health science committees created five additional courses to the revised curriculum, which lead to an even greater number of healthcare professionals needed to teach (TEA, 2017).

CTE plays a main role in preparing individuals for teaching jobs in health-related occupations. Many teachers in the career and technical related areas, such as the health science teachers, leave the teacher profession for a variety of reasons (Ruhland & Bremer, 2003; Walter & Gray, 2002; Song et al., 2011), including job dissatisfaction, career dissatisfaction, available opportunities, or job performance (Rhodes & Doering, 1983), which could lead to decreased engagement. However, when teachers are engaged, there is less burnout and stress, supporting the idea that the higher the level of teacher engagement, the less likely they will leave the profession (Hakanen et al., 2006). A positive, supportive learning environment for teachers may decrease turnover intention (Song et al., 2011).

Purpose of the Study

Currently, there are shortages of healthcare professionals throughout the United States. In addition, there is a shortage of health science teachers needed to prepare individuals to work in
this sector (Advance CTE Report, 2012). The purpose of this study was to investigate the extent to which teacher engagement and job satisfaction are related to their intent to leave the job. Given the importance of healthcare, especially with an aging United States population, it is critical to study the impact of work engagement and job satisfaction on teacher intent to leave the health science teaching profession.

Research Questions

The following research questions guided the study:

1. What are the relationships between job satisfaction, work engagement, and turnover intention of health science teachers?

2. Do job satisfaction and work engagement predict turnover intention of health science teachers?

3. Does work engagement moderate the relationship between job satisfaction and turnover intention?

The result of the current study may influence retention of health science teachers in CTE. The shortage of CTE teachers in the state of Texas provides a reason to investigate the turnover intention of Texas health science teachers (Franklin, 2015). This shortage will have an impact on the future labor market projections for the healthcare professionals and the health of the society.

Theoretical Framework

The constructs researched in this study are job satisfaction, work engagement, and turnover intention. The possible relationships between job satisfaction, work engagement, and turnover intention are framed from two theories: the motivational/hygiene theory and the job demands-resources (JD-R) theory.
Herzberg Motivation/ Hygiene Theory

Herzberg (1971) proposed a two-factor theory, called the motivation-hygiene theory. The theory position is that humans, have two different types of needs, and different aspects of the work environment either satisfies or dissatisfies those needs (Herzberg, 1971). The theory includes factors for motivation and hygiene (Sachau, 2007).

Motivation Factors (Intrinsic)

Certain characteristics, called motivators, are important for an employee’s level of job satisfaction (Waltman, Bergom, Hollenshead, Miller, & August, 2012). The motivation factors are intrinsic to the job and are intrinsically rewarding for employees (Herzberg, 1971; Herzberg et al., 1993). For example, tasks well done, advancement, recognition, responsibility, or the work itself is considered as intrinsically rewarding (Herzberg, 1971; Sharp, 2008). In addition, motivation factors include the fact that an individual will work toward being the best in job tasks or duties (Herzberg, 1971; Herzberg et al., 1993; Lundberg, Gudmundson, & Anderson, 2009). When these factors are satisfying to the individual, the factors then work as motivators for the individual (Herzberg, et al., 1993). However, the factors do not cause dissatisfaction if they are missing in the workplace; instead, there is a lack of satisfaction for the individual (Herzberg, 1971; Herzberg et al., 1993).

Hygiene Factors (Extrinsic)

Other characteristics, known as hygiene factors, lead towards an employee’s job satisfaction (Waltman, et al., 2012). The hygiene factors, also known as extrinsic factors, are the basic needs for survival for an individual (Herzberg 1971; Herzberg, et al., 1993). These factors
include salary, rewards, benefits, proficient supervision, competent administration, a good work environment, and work relationships (Herzberg, 1971; Herzberg et al., 1993; Bassett-Jones & Lloyd, 2005; Sharp, 2008). If these factors are not satisfied then the individual becomes dissatisfied (Herzberg et al., 1993). Even if these factors are met for the worker, they do not motivate an individual, but help to prevent dissatisfaction (Herzberg et al., 1993). The Herzberg theory implies that satisfaction and dissatisfaction are actually opposite of the other and that job satisfaction is an absence of job dissatisfaction (Herzberg, et al., 1993). An individual’s behavior is based on needs, motives and values to be satisfied (Müller, Alliata, & Benninghoff, 2009).

Studies Related to Herzberg’s Motivation/ Hygiene Theory

Since Herzberg developed the theory in 1959, numerous studies have tested the validity of the theory. Several of these studies are detailed in the following paragraphs.

The results of a study of nursing faculty in the United States supported the Herzberg Motivation-Hygiene theory being a strong predictor of nursing faculty’s intention to continue working in the academic arena. Derby-Davis (2014) surveyed full-time nursing faculty teaching in accredited bachelor nursing programs. The motivational factors used in the survey included achievement, recognition, responsibility, work, and growth. The hygiene factors used in the survey of nursing faculty included supervision, interpersonal relations, job security, and faculty salary (Derby-Davis, 2014). It was determined that maintaining the motivation-hygiene factors in the academic workplace, will result in a sustained nursing faculty (Derby-Davis, 2014).

A study by Zhang, Yao, and Cheong (2010) surveying the job satisfaction of city managers in United States, using the Herzberg two-factor theory identified the motivation factors specific to a city manager. These factors included government performance, a city manager’s
influence on policies, and the city manager-city council relationship. The hygiene factors identified for city managers included salary, city population, and economic pressures (Zhang et al., 2010). The study found a slight overlap in the motivation-hygiene factors specifically for city managers due to the specificity of these factors. Despite these limitations, the study concluded that city councils should accept the city manager as the primary advisor for the city. City councils should also show respect for a city manager’s motivation and expertise in policymaking (Zhang et al., 2010).

Bassett-Jones and Lloyd (2005) conducted research to determine whether Herzberg’s two-factor theory is still relevant to workplace studies since its inception over 50 years ago. In the research, it was found that employees were motivated in the workplace by intrinsic factors. The intrinsic factors included a desire for recognition by management for their work, which overshadowed the financial rewards (Bassett-Jones & Lloyd, 2005).

Parsons and Broadbridge (2006) surveyed shop managers at 826 charity shops, analyzing the role of job characteristics and communication regarding job satisfaction and motivation. The two-factor theory had been used in commercial retail management’s practices and the researchers decided to use it in framing the study of job characteristics in charity retailing. The study found that managers were satisfied with the amount of work performed, the variety of the work, the skills utilized, the independence extended to the managers to do the job, and receiving good job performance reports (Parsons & Broadbridge, 2006).

Waltman et al. (2012) researched the Herzberg two-factor theory in a study of non-tenured full-time and part-time faculty. The findings of the study supported the motivating factor (the work itself), which included teaching and the students being taught as a source of the job satisfaction. The study found that lack of respect and being included in work (on-campus)
activities is a predictor for job dissatisfaction among non-tenure-track faculty. The findings of this study partially refuted Herzberg’s claim that recognition is not related to job dissatisfaction (Waltman et al., 2012).

Teachers may have the intent to leave the job due to a lack of motivation and not being satisfied in the workplace. For example, if the hygiene factors are not present, it will be challenging for teachers to perform the daily tasks of instruction, and the teacher may become dissatisfied with the job. Without these factors, teachers’ work engagement decreases due to lack of satisfaction in their teaching career, which could possibly lead to the intent to leave the teaching profession.

Job Demands-Resources (JD-R) Theory

Working conditions in the Job Demand-Resources (JD-R) theory are placed into two categories called job demands and job resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The premise is that employees are more engaged when job resources are high and job demands are low and employees are less engaged when job demands are high and resources are low (Demerouti et al., 2001; Korunka, Kubicek, Schaufeli, & Hoonakker, 2009).

Job demands are referred to as, “the physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort or skills and are therefore, associated with certain physiological and/or psychological costs” (Bakker & Demerouti, 2007, p. 312). Examples of job demands include a work environment that is unfavorable with high amount of work pressure (Bakker & Demerouti, 2007). The health of an individual may be affected, including emotional exhaustion, work overload, and unfavorable physical environment (Bakker & Demerouti, 2007; Hakanen, Schaufeli, & Ahola, 2008). Not all
job demands are necessarily stressors for an employee; however, when those demands require much repeated effort, the demands may lead to job dissatisfaction and a decrease in work engagement (Schaufeli & Bakker, 2004). These negative demands may lead to job stressors (Bakker & Demerouti, 2007). The process that occurs when employees experience these job related demands is the health impairment process (Schaufeli & Bakker, 2004). Health impairment can occur if work engagement and positive motivational outcomes do not occur (Hakanen, et al., 2008).

Job resources “refer to those physical, psychological, social or organizational aspects of the job that are either/or: functional in achieving work goals, reduce job demands, and stimulate growth, learning, and development” (Bakker & Demerouti, 2007, p. 312). Job resources include aspects of the job that are needed to achieve work goals, decrease the job demands, encourage personal growth, achievement, and development (Demerouti et al., 2001; Bakker & Demerouti, 2007). Job resources may play an important role in creating extrinsic motivation because resources are available to achieve work goals (Schaufeli & Bakker, 2004; Hakanen et al., 2008). Job resources may also play an intrinsic motivational role given that resources enhance the growth, learning, and development of the worker (Schaufeli & Bakker, 2004; Hakanen, et al., 2008).

The motivational process (job resources) and the health impairment process (job demand) have been supported through studies of job resources as it relates to the level of work engagement (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007). When employees’ needs are met through job resources and the achievement of work goals are accomplished, the predicted outcome is positive work engagement. The employee then is motivated to stay at the job and maintain a low intention to leave the workplace (Schaufeli & Bakker, 2004).
This motivational factor, arising from the availability of job resources, plays a key role in work engagement (Schaufeli & Bakker, 2004; Korunka et al., 2009). Along with motivation, several key factors attribute to work engagement (Bakker & Demerouti, 2008). The resources available to a teacher plays an intrinsic motivational role because the teacher grows in learning and development (Bakker & Demerouti, 2008). The job resources are important as external motivational triggers because they promote an atmosphere for achieving work goals (Hakanen et al., 2006). Job resources also include access to information (Hakanen et al., 2008). Without access to information through professional development, the employee, more specifically a teacher, will not learn and grow in development (Roslan, Ho, Ng, & Sambasivan, 2015). Along with access to information, administrative support is also an intrinsic motivator (Hakanen et al., 2008). Without the support of the administration, teachers are likely to have a decrease in work engagement (Roslan, et al., 2015). Job resources increase work engagement, thereby, providing positive job attitudes and organizational commitment (Schaufeli & Bakker, 2004).

Studies Related to JD-R Theory

Park and Gursoy (2012) studied generational differences in work engagement using the JD-R theory as the framework for the study. The purpose of the research was to investigate if age mattered in work engagement. A North American hotel company agreed to allow 29 hotel properties to participate in the study, where the human resources departments gave the survey to hotel managers in each department (Park & Gursoy, 2012). The findings concluded that older employees do not need as much attention as millennial employees to be totally engaged in the work. Millennial employees require jobs that are meaningful for sustainability (Park & Gursoy, 2012). If managers foster the millennial’s personal characteristics such as self-esteem and
improve the work environment, the employee will have successful work engagement (Park & Gursoy, 2012).

The JD-R theory was applied to a study conducted in 2016 on brand name beverage sale personnel at several United States beverage firms (Allison, Flaherty, Jung, & Washburn, 2016). The purpose of the study was to investigate how selling the brand name beverages affects a salespersons’ job satisfaction. The sales people chosen to be surveyed were from groups that sold brand name beverages. Participants in the survey had to be involved in direct communication with the customer accounts. The study found that sales people were satisfied with their job when selling brand name beverages. It was found that a salesperson’s attachment to the brand name acted as a deterrent from the job demands, including the rules surrounding flexibility of the job, and the results supported the JD-R theory (Allison et al., 2016).

A study was conducted with higher education teachers in the Netherlands to determine if job resources play a role in job satisfaction or dissatisfaction leading to exhaustion (Bakker, Demerouti, & Euwema, 2005). Four job demand areas and four job resource areas were studied and it was concluded that high demand from employees resulted in exhaustion. The study demonstrated that the interaction between job demands and job resources determined the amount of exhaustion in the teachers. The researchers determined that employees reported increased levels of exhaustion when the job demands were high and the job resources were low. The study also showed that higher education teachers demonstrated a lack of motivation when not provided the job resources necessary to complete their teaching tasks (Bakker et al., 2005).

Hakanen et al., (2008) researched the motivational and health impairment processes of the JD-R theory. The researchers studied 2,555 Finnish dentists and found that job resources influenced the dentists’ work engagement (Hakanen et al., 2008). Job demands predicted the
health impairment process, which was reflected in depression. The study found that corporations should promote health and perform prevention strategies for workplace conditions (Hakanen et al., 2008).

The findings of a study by Bakker and Bal (2010), found that teachers with a positive work environment enhanced the teacher’s engagement in their job. The study found that a teacher’s access to resources should be a consideration for interventions and for training programs or professional development (Bakker & Bal, 2010). A similar study by Roslan et al., (2015) found a significant relationship between job resources and work engagement. The study found that when there is a limited supply of resources, the work engagement decreases, leading to teacher job dissatisfaction (Roslan et al., 2015). The study concluded that lack of job resources resulted in high job demands. If job resources were available, then there would be low job demands (Hakenen et al., 2008). The study found increased workload and student lack of discipline, drained teacher energy (Roslan et al., 2015).

Skaalvik and Skaalvik (2017) researched how job demands and job resources affected high school teachers in Norway as the demands and resources related to the teachers’ job satisfaction, self-concept, and intention. The team studied the job demands (working conditions) and job resources (autonomy, supportive colleagues, and administration). The results of the study supported the JD-R model, concluding that the processes of health impairment and motivation predicted teacher job satisfaction. The study concluded that the two processes interacted with each other in the model (Skaalvik & Skaalvik, 2017).

Limitations

Inevitably, every study has limitations. For this study, a questionnaire was created and
distributed to the health science teachers of Texas. If during the data collection process, the number of returned surveys appeared low, a second appeal was made to increase participation. A low return rate of the surveys could be a limitation, which could influence the outcome of the study. The researcher cannot control who may or may not answer the questionnaire. An additional limitation may be the non-random sample, which is composed of volunteers, which may or may not represent the population. The higher number of respondents, the more accurate the results of the study.

The study relies on the self-reported questionnaire and the health science teachers. The survey has time constraints, which may result in participants thinking about not having enough time to complete the questionnaire (Simon & Goes, 2013). Additionally, participants may provide incorrect responses to the survey, which would skew the results of the study. An external variable called the participant variable depends on the respondents' individual characteristic that may affect how a participant responds to the questionnaires (Clarke, 2012), therefore influencing the results.

The time of day that the questionnaire was answered may also have affected the outcome. Incentives, such as the Amazon gift card did not improve the response rate, although research indicates that it should increase the response rate (Baruch & Holtom, 2008). Although as baby boomers retire and younger technology savvy people are in the workplace, electronic surveys will be prevalent (Baruch & Holtom, 2008).

Common method bias may be a concern because the method used to measure the variables in this study are explored by the same research method (Siemsen, Roth, & Olvieira, 2010). Additionally, the problem may occur when the variables overlap (Conway & Lance, 2010; Seimsen et al., 2010). The constructs of work engagement, job satisfaction, and turnover
intention do not overlap in this study. Validity of the constructs will be analyzed closely in this study to determine if common method bias existed (Conway & Lance, 2010).

Delimitations

Delimitations are known as the choices made by the researcher conducting the study (Simon & Goes, 2013). Any findings concluded outside of this study will be put forward as future research and will not be analyzed during this research. The study is delimited to the survey results from the responding participants with the assumption that the responses are based on the participants’ current position as a health science teacher. The results of this study may be generalizable to educators in the state of Texas who teach secondary level health science courses with at least one-year experience working as a health care professional.

Definitions of Key Terms

The following definitions were used for the study.

- Career and technical education (CTE) - CTE is training that applies knowledge and skills learned in career preparation (TEA, 2017).
- Career clusters - Career clusters are a method of grouping occupations into 16 categories. In 1996, the cluster concept was created by a partnership between the U.S. Department of Education; the Office of Vocational and Adult Education (OVAE); the National School-to-Work Office (NSTWO); and the National Skill Standards Board (NSSB) (NASDCTE, 2012).
- Engagement - Work engagement is defined as “positive, fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova,
• Health science teacher - The health science teacher provides instruction in the Health Science Career Cluster. The Texas Administrative Code (TAC §233.14) states that “the certification for health science technology education requires an associate or more advanced degree from an accredited institution of higher education, current licensure, certification or registration by a nationally recognized agency as a health professions practitioner, and approval of two-years of wage earning experience by an approved educator certification program.”

• Job satisfaction - Locke (1976) defined job satisfaction as “... a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (p. 1304).

• Texas Education Agency (TEA) - The TEA is a state agency ruled by the Texas legislature to oversee law and rule for public education kindergarten through year twelve (TEA, 2017).

• Turnover intention - Turnover intention is defined as the “turnover act-the leaving of an organization-is a time specific event marked by physical separation from the organization” (Mobley, 1982, p. 111).

Summary

The health science professions are one of the largest growing occupations in the United States (BLS, 2015). The job growth rates in the Health Science Career Cluster are significant (Advance CTE, 2017). However, there is a chronic shortage of health science teachers needed to prepare professionals for work in this sector. Teacher engagement and job satisfaction are factors that can potentially help to determine whether a teacher will stay in the profession. The purpose
of this study was to investigate the relationships between work engagement, job satisfaction, and turnover intention of the Texas health science teachers.
CHAPTER 2
LITERATURE REVIEW

The literature review outlines constructs of this study: work engagement, job satisfaction, and turnover intention. The purpose of the current study was to analyze possible relationships between the constructs within the Texas health science teacher community.

Job Satisfaction

One of the most studied topics in industrial-organizational psychology is job satisfaction (Elfstrand Corlin & Kazemi, 2017; Judge, Spector, 1997; Weiss, Kammeyer-Mueller, & Hulin, 2017). Judge et al. (2017) examined the studies of job satisfaction from the early years of the 20th century to the first decade of the 21st century and discovered that job satisfaction was studied in over 70% of the articles in the PsycINFO database (Judge et al., 2017). Influential to this time was the Herzberg two-factor theory (Judge, et al., 2017). Toward the end of the 20th century, the relationship between job satisfaction and turnover intention was studied extensively (Judge, et al., 2017; Lambert, Lynne Hogan, & Barton, 2001). Today, many organizations continuously assess employee job satisfaction (Pepe, Addimando, & Veronese, 2017).

Spector (1997) described job satisfaction as the extent that someone likes the job. Researchers analyzing job satisfaction often cite Locke’s definition of job satisfaction (Elfstrand et al., 2017). Locke (1976) defined job satisfaction as “... a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (p. 1304). Locke (1976) suggested that employees will experience an increase in job satisfaction when the needs of that employee are met in the workplace. Both the intellectual and emotional feelings of job satisfaction are indicated in Locke’s definition (Saari & Judge, 2004; Skaalvik & Skaalvik,
When employees evaluate a job, employees look at the intellectual and emotional components of the position (Saari & Judge, 2004).

Job satisfaction can be influenced by job characteristics (Hauff, Richter, & Tressin, 2015). There are five job characteristics: identity of a task, the significance of the task, the variety of skills needed for the task, autonomy, and feedback about the task completed (Oldham, Hackman, & Pearce, 1976). Once the task is identified as to what is required to complete the task or job, the significance of the task is evaluated (Oldham et al., 1976). The task is analyzed for the degree that has an impact on the work of others (Oldham et al., 1976). Autonomy is the freedom the individual has to perform the task and the feedback is from the employer as to how well the task is performed (Oldham et al., 1976).

The job satisfaction characteristics are similar to the factors in the Herzberg (1971) motivation-hygiene theory (Hauff et al., 2015). Herzberg believed that a positive work environment led to job satisfaction and the factors or job characteristics that lead to job satisfaction are different than the factors leading to job dissatisfaction (Thibodeaux, Labat, Lee, & Labat, 2015). The Herzberg theory included job characteristics within the motivational factors of promotion, growth, recognition, responsibility, and work (Hauff et al., 2015). Kaasa (2011) analyzed the intrinsic and extrinsic job characteristics further and stated that the characteristics can be linked to Herzberg’s differentiations between the intrinsic factors (motivators) and the extrinsic factors (hygiene).

The intrinsic factors are the motivational factors, also called satisfiers, within the work that employees perform, such as recognition for a project or job well done, increased responsibility, achievement, advancement within a company, or even the work itself (Lundberg, et al., 2009; Hancer & George, 2003). Herzberg (1971) concluded that these factors imply that
employees try to become all that they can be within the workplace. When employees are satisfied with the position held at work and tasks at work, then these factors work as motivators (Herzberg, 1971). Motivation is based on a sense of achievement, recognition for achievement, job responsibility, and personal growth (Herzberg, 1971).

The extrinsic rewards such as advancement and pay are provided to motivate the individual employee (Mottaz, 1985). Warr (2007) defined job characteristics that are most associated today with job satisfaction — these are: individual autonomy, opportunities to use the skills known to the worker or the opportunity to learn new skills, supervision, job demands, work relationships, income, good work environment, company policies, and a variety in the actual work of the job (Hancer & George, 2003; Mottaz, 1985). When these factors are missing from the workplace environment, then it could create dissatisfaction in the job (Hancer & George, 2003).

Tietjen and Myers (1998) reviewed the theories of Locke and Herzberg and concluded that both theories emphasize the work itself as having the most to do with job satisfaction (as cited in Parsons & Broadbridge, 2006). The researchers stated that “enhanced, sustained performance on the job results not so much from the fully furnished office of the temperature of the work environment, but the basic duty assigned in the job description and all those intrinsic feeling that produce positive attitudes about the duty” (Tietjen & Myers 1998, p. 231).

Studies Related to Job Satisfaction

Liu and Ramsey (2008) conducted a study examining teachers’ job satisfaction through examination of national surveys conducted in the United States. A total of 4,952 participants’ surveys were analyzed in the study. The study determined that teachers had varying degrees of
job satisfaction with relationship to the different job duties. The teachers were most dissatisfied with working conditions and the pay scale. The researchers also found that teachers’ job satisfaction increased with the years of teaching. It was concluded that when early career teachers were dissatisfied with the job, these teachers left the profession (Liu & Ramsey, 2008).

Ghazzawi (2011) conducted a study to determine if a relationship occurred between age and job satisfaction. The subjects in this study were information technology (IT) professionals in the United States. The study concluded that age does not play a role in job satisfaction for IT professionals. Research implications for this study included that management should pay attention to the age differences and work towards sustainability for the older employees by creating a sense of value for those employees (Ghazzawi, 2011).

Skaalvik and Skaalvik (2011) examined the relationship between teachers’ job satisfaction, emotional exhaustion, and motivation to leave the teaching profession. The study included Norwegian elementary and middle school teachers and found that a lack of job satisfaction leads to a growing rate of turnover intention, which affects work engagement. The structural equation modeling (SEM) was analyzed and found motivation to leave the profession was negatively related to job satisfaction (Skaalvik & Skaalvik, 2011). Mediators, such as emotional exhaustion led to job dissatisfaction and the motivation to leave the teaching profession (Skaalvik & Skaalvik, 2011). Although Skaalvik and Skaalvik’s (2011) research shares similarities with this study, it was not conducted at the secondary level nor in the context of the health science field.

In a study by Kabungaidze, Mahlatshana, and Ngirande (2013), the relationship between job satisfaction, demographic variables, and turnover intention were analyzed. The sample population was 300 school teachers. The study concluded that there was a negative relationship
between job satisfaction and turnover intention. Recommendations from this study included school district administration creating strategies to keep teachers in the classroom and decrease job dissatisfaction (Kabungaidze et al., 2013).

Zamir (2013) conducted a study to analyze the relationship between high school teacher’s job stress and job satisfaction. The study determined that there was a significant negative relationship between the stressors of teaching and job satisfaction. The study concluded that the higher the job satisfaction, the lower the stress of the job.

According to Skaalvik and Skaalvik (2011), a teacher’s job satisfaction is the teacher’s reactions to the role as a teacher and the work performed as said teacher. Research has determined that specific points of job satisfaction for teachers may be misleading because teachers value different aspects of the job as important to their satisfaction (Skaalvik & Skaalvik, 2011). Ingersoll (2001) found people left the teaching profession because of lack of support, student discipline, and a lack of motivation seen in the students.

Job satisfaction or dissatisfaction may affect work engagement (Bakker, Demerouti, & Euwema, 2005). If an employee is not satisfied with their job, the employee is not going to be engaged in doing a good job for the organization (Bakker et al., 2005). When employees are dissatisfied, absenteeism, lack of energy, and lack of regard for one’s own work increase within the organization (Bakker et al., 2005). Job dissatisfaction also leads to a lack of engagement in one’s own work (Mobley, 1982).

While studies have been conducted on teachers’ job satisfaction, its relationship with work engagement and turnover intent, there is a lack of focus on the secondary health science education arena. Considering the importance of health science, it is important to investigate how job satisfaction and work engagement are related to turnover intention of teachers.
Work Engagement

Work engagement has become significant for practitioners and researchers. The last 10 years have seen a dramatic increase in the number of studies related to work engagement (Saks & Gruman, 2014). Researchers have agreed that work engagement is very important in the success of organizations (Kim, 2017; Saks & Gruman, 2014). Scholars in the field of organizational psychology have been studying work engagement as a way to develop human resources and their ability to improve organizational effectiveness (Luthans, 2002).

Work engagement research shows that half of the United States workforce is not totally engaged in their job, causing a loss in productivity (Kowalski, 2003). When employees are engaged in the workplace, there is improvement in productivity, positive employee/customer relations, organizational stability, and the cost of recruitment and retention decreases (Saks & Gruman, 2014).

Kahn (1990) began studying work engagement analyzing personal engagement or disengagement and was the first to develop thoughts on the concept. Kahn (1990) first described engagement in work as how much a person is present in the work being performed. He further defined work engagement as “the harnessing of organization members” selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances (Kahn, 1990, p. 694). The research Kahn performed focused on the employees’ experiences, and the context of the work. Kahn (1990) studied engagement on all levels of including personal, interpersonal, and organizational engagement. When employees are engaged at work, their cognitive, emotional, and physical aspects contribute to the job performance. Kahn (1990) found employees are engaged in their work when the employee immerses in the work role and are less likely to leave the organization. This state
of psychological well-being is known as employee engagement (Schaufeli, Bakker, & Salanova, 2006).

More recent scholars defined work engagement as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli & Bakker, 2004, p. 295). Vigor is one’s willingness to invest in work and persist in that work, even when it is very difficult (Kulikowsi, 2017). Dedication is how involved a person is at work. The person is enthusiastic and inspired by the job performed (Kulikowsi, 2017). The third characteristic of work engagement is absorption, where an employee is so involved in the work that time becomes distorted (Schaufeli & Bakker, 2004). The employee has a hard time removing from the work because of the absolute enjoyment received from doing that work (Schaufeli, Salanova, González-Romá, & Bakker, 2002).

The job demands-resources theory contains two processes that influence work engagement: job demands and job resources (Schaufeli et al., 2002). Job demands are sources of work related stress, including work overload and work pressure that can lead to exhaustion or health impairment. Employees that experience high job demands demonstrate lower levels of work engagement (Schaufeli & Bakker, 2004). Job resources are aspects of the job, including professional development and wages that motivate employees resulting in growth, learning, and development (Schaufeli et al., 2002). The presence of job resources results in employees who are more engaged at work (Schaufeli & Bakker, 2004).

Studies have found a positive relationship with work related outcomes and the performance of an organization (Schaufeli et al., 2002; Schaufeli & Bakker, 2004). Employees who are engaged at work are energetic and can effectively handle whatever difficulty the work presents (Schaufeli, Bakker, & Salanova, 2006). Work engagement is beneficial to the
organization and the employee, both at work and outside of work (Seppälä, Mauno, Feldt, Hakanen, Kinnunen, Tolvanen, & Schaufeli, 2009). Work engagement outcomes include low turnover intention, decreased work stress, increased employee productivity, commitment to the workplace, and satisfied customers (Schaufeli et al., 2002; Schaufeli & Bakker, 2004; Saks, 2006). Lack of engagement may lead to a lack of job satisfaction and turnover intention (Skaalvik & Skaalvik, 2011).

Bakker et al., (2011) identified that job satisfaction is actually a consequence of engagement; therefore, work engagement is important for success. Research has concluded that engaged employees invest more cognitive, physical, and emotional attributes into the job in order to obtain recognized performance (Barbosa de Oliveira & da Costa Rocha, 2017). Studies have shown when there is a high level of engagement; there is a high level of commitment by the employee (McBain, 2007). This is an important concept for the service-related industries (Barnes, Collier, & Robinson, 2013). In today’s global world economy, the engagement of employees, leads to increased productivity and a strong organization.

When employees are engaged, this increases an organization’s value and when this value is increased, the organization operates more efficiently, a characteristic of a successful 21st century organization (Lapoint & Liprie-Spence, 2017). Organizations can create a positive work environment through procedures that encompass a clear understanding of the organization’s mission (Rutledge, 2006). Ways for organizations to increase the positive work environment include professional development, good leadership, and inclusion of employees in organization decision-making (Kim, 2017; Shuck et al., 2014). Kahn (1992) found that when employees were allowed to bring more of themselves into their work, the employees were more engaged.

In this study, work engagement analysis provides valuable information for health science
administrators in relation to the retention of health science teachers. An engaged employee, as described, should certainly be the desired state of health science teachers, given the intricate and complex nature of jobs within the health field.

Studies Related to Work Engagement

Schaufeli and Bakker (2004) proposed a model to predict work engagement from job demands and job resources. The study was conducted on employees from several Dutch service organizations. The results indicated a positive relationship between job resources and work engagement. Lack of work engagement was found when there was a lack of job resources, which produced a negative work environment. The study supported the new concept during that time of work engagement and the importance of it in the workplace (Schaufeli & Bakker, 2004).

Skaalvik and Skaalvik (2017) explored the job demands and job resources of teachers in Norway high schools. The researchers wanted to know how job demands and job resources were related to the teachers’ job satisfaction, self-efficacy, and motivation to leave the teaching profession (Skaalvik & Skaalvik, 2017). The study found that teachers, who had job resources available in the form of a supportive climate at the school, including support from administration and colleagues, were more engaged (Skaalvik & Skaalvik, 2017). The supportive environment was found to be directly related to job satisfaction; therefore higher levels of work engagement (Skaalvik & Skaalvik, 2017).

Shuck and Reio (2014) studied how the psychological climate of the workplace affected employee engagement. Participants in the online survey were health care employees from United States, Canada, and Japan. Health care was chosen because research suggested that this group of workers experience the highest levels of emotional exhaustion and job stress (Shuck & Reio, 2014). The study concluded that employee engagement moderated the psychological climate and
the individual affective outcome of personal accomplishment (Shuck & Reio, 2014).

A work engagement study with health care workers from both rural and inner city was conducted with approximately 200 healthcare facilities across the United States (Shuck, Twyford, Reio, & Shuck, 2014). The purpose of the study was to determine if a relationship existed between human resource development (HRD) practices and the intent to leave the job because of employee engagement (Shuck et al., 2014). The research found that when HRD takes a more active role in providing support to employees with supportive management practices, challenging work, and recognition for employees’ contributions to the company, employee engagement exists (Shuck et al., 2014).

Kim (2017) analyzed the possible relationships between work engagement, job resources, job performance, and turnover intention in private sector organizations with a total of 571 participants. The results demonstrated that job resources had a positive effect on work engagement and correlates with other studies (Kim, 2017; Schaufeli et al., 2006). The study also found when employees are engaged in the work, productivity increases (Kim, 2017). Work engagement was found to have a negative effect on turnover intention (Kim, 2017; Schaufeli & Bakker, 2004).

If employees are in a positive work environment and are engaged, they have a low tendency to leave the organization where they are currently employed (Houkes, Janssen, de Jonge, & Bakker, 2003; Bakker & Bal, 2010; Song, Bae, Park, & Kim, 2013). Work engagement leads to higher performance and therefore leads to job satisfaction (Bakker & Bal, 2010; Bakker & Demerouti, 2008; Song et al., 2013). People who are engaged in their work can cause coworkers to become engaged in their work, creating a positive environment for all on the same team (Bakker & Demerouti, 2008).
There is no evidence of studies particularly pertaining to health science teachers in the area of Career and Technical Education (CTE) regarding work engagement and how it might be related to job satisfaction and turnover intent. However, investigating how work engagement and satisfaction impact turnover intent is relevant and will provide insight to academic leaders as well as address an existing gap in the literature.

**Turnover Intention**

Over the years, turnover and turnover intent have been studied by researchers because of its impact on productivity. Almost 2,000 articles have been written on employee turnover in the last 100 years (Lee, Hom, Eberly, Li, & Mitchell, 2017). Major turnover theories include Mobley and Price (as cited in Lee et al., 2017). Mobley (1982) defines turnover intention as a determined decision to leave an organization. If leaving the job is a high price to pay and the search outcome for a new job is low, the employee may reevaluate the job currently held. The employee may engage in other types of withdrawal and keep the job (Mobley, 1982). Of course, if a search revealed a good alternative to the present position, the employee would leave. Factors exist to stop the search for another position and those include spouse and health problems. Overall, Mobley (1982) felt there were several steps involved in turnover intention process.

Price focused on why employees leave rather than how they leave the job (as cited in Lee et al., 2017). Expanding on Mobley and Price, Steers and Mowday (1981) recognized the concepts of organizational commitment and job performance as reasons to leave the job. The researchers also recognized the alternative ways to deal with leaving an organization. Absence is a great example of an alternative to quitting (Steers & Mowday 1981). Ingersoll (2001) defined turnover intention, as the likelihood an employee would voluntarily leave the organization. An
employee thinking of quitting goes on to the next step, the intention to leave (Mobley, 1982). Twenty-first century scholars encourage researchers to be innovative in the study of turnover intention by studying the topic in nontraditional methods and analyze the date with more sophisticated analyses (Lee et al., 2017).

Turnover intention has often been studied in relation to job satisfaction. The intent to leave a job occurs when an employee has experienced job dissatisfaction (Mobley, 1982). Once the employee feels job dissatisfaction, the next step is to evaluate the cost of quitting and searching for alternatives (Mobley, 1982). For teachers, studies of turnover intention have linked negatively to job satisfaction, working conditions, and organization commitment (Reio & Segredo, 2013). The employee must decide whether to leave the organization and find an alternative method of support (Mobley, 1982). The intent to leave a job is the strongest precursor of turnover (Lee & Mowday, 1987).

Lee and Mowday (1994) added to the theories of turnover intention by theorizing four paths to turnover. The paths include leaving for additional education (a preexisting plan), performing job duties that are unethical or illegal, an offer from another company (better job opportunity), and simply dissatisfied with the job (Lee, Hom, Eberly, Li, & Mitchell (2017). Research also concluded that the path that included doing something illegal or unethical per the supervisor, was the largest reason for initiating the turnover process (Lee et al., 2017).

There are different motivators that lead employees to want to leave the profession. Even seasoned teachers have the desire to leave the profession if the teacher experiences job dissatisfaction. Teacher turnover affects students and the school districts (Ingersoll, 2001). Training and replacing a teacher can be very costly for a school district. Increasing teacher job satisfaction will reduce teacher turnover intention (Ingersoll, 2001).
Studies Related to Turnover Intention

Tourangeau, Cranley, Spence Laschinger, and Pachis (2010) examined the relationship of job satisfaction and turnover intention on long-term care employees. The survey included 675 staff from 26 long-term care facilities. The staff survey included registered nurses, other allied health professionals, and non-professionals (Tourangeau et al., 2010). The study found long-term care employees had a decreased intention to leave the job if there were strong work relationships, a good feeling of personal accomplishment, and a decrease in emotional exhaustion (Tourangeau et al., 2010).

A study of the turnover intention of middle school teachers in a large Midwestern school district had a Cronbach’s alpha of 0.86 and determined that organizational commitment predicted turnover intention (Reio & Segredo, 2013). The study found that job satisfaction was not a significant predictor of turnover intention (Reio, & Segredo, 2013).

Reio and Segredo (2013) studied the turnover intention of 252 middle school teachers from 10 schools in the Midwest United States. The researchers examined possible relationships between commitment, job satisfaction, mentoring, and turnover intention. The study found that teachers who adapted well to the work environment by connecting with mentors, were more committed to the organization and satisfied with the teaching profession. Therefore, there was a decrease in the intent to leave the profession (Reio & Segredo, 2013).

As stated previously, Skaalvik and Skaalvik (2011) determined in a study, that when elementary and middle school teachers have a lack of job satisfaction and motivation to leave the profession work engagement is affected. The quality of their teaching, along with student engagement will suffer. Teachers leave the profession for a variety of reasons and 25% of United
States’ teachers are leaving before starting the third year of teaching (Skaalvik & Skaalvik, 2011).

Thibodeaux, Labat, Lee, & Labat (2015) determined if administrative leadership and the high-demands of standardized testing increased a teacher’s intent to leave the profession, using Herzberg’s two-factor theory as the theoretical framework. A survey was conducted in five school districts along the southern coast of the United States. The research found that lack of support from the administrative leadership was one of the main reasons for leaving the profession. The Pearson correlation indicated in this study that there was a significant difference in administrative leadership styles, especially with principals, and their behaviors were a determining factor as to whether a teacher would stay in the profession (Thibodeaux et al., 2015).

Despite all these findings, there has been a lack of research on teacher satisfaction, engagement, and turnover in the health science context, more specifically secondary CTE health science teachers. The shortage of teachers in this area, and the growth of health-related job positions warrant a need to investigate job satisfaction, employee engagement, and turnover intention.

Job Satisfaction, Work Engagement, and Turnover Intention

While job satisfaction, work engagement, and turnover intention has been studied extensively, not many studies have been found that examined these variables together in a single study, especially in the context of health science in CTE.

One relatively recent study by Lu, Lu, Gursoy, and Neale (2016) involved job satisfaction, work engagement, and turnover intention. The study looked at the job satisfaction, work engagement, and turnover intention of employees at various position levels. The employees
involved were line-level employees and supervisors in mid-level hotels managed by a well-known North American hotel corporation (Lu et al., 2015). Supervisors had higher work engagement and lower turnover intention than line-level employees. The study found work engagement, job satisfaction, and turnover intention differed by job positions. The study also found that supervisors were less likely to quit; therefore, the supervisors were satisfied with the job. The research concluded that work engagement-dedication outdid work engagement-vigor and work engagement-absorption, which influenced job satisfaction and turnover intention. This was at both the line-level and supervisor employee positions (Lu et al., 2015). Employee engagement has been found to be a predictor of job satisfaction and turnover intention (Alarcon & Edwards, 2010). However, this study explores the role of job satisfaction in predicting employee engagement and turnover intention.

Job Satisfaction and Work Engagement

In today’s competitive work environment, it is important to ensure that employees are engaged on the job because they provide value to the organization and are dedicated to their job roles. Employers can create a job environment by providing meaningful job resources to aid in the provision of a sense of satisfaction for employees (Abraham, 1999). When the job environment meets the employees’ needs, higher levels of satisfaction will be attained. Employers should ensure that the job itself is so designed to provide satisfaction for employees. Job satisfaction impacts engagement levels of employees therefore emphasizing the need for supervisor support, fair and sound company policies and procedures, and a job itself that is challenging (Abraham, 2012).

Skaalvik and Skaalvik (2014) studied job satisfaction and work engagement on teachers.
The study revealed that when teachers were engaged through autonomy and self-efficacy, the teachers were satisfied in their job. The researchers conducted multiple regression analysis and discovered that self-efficacy and autonomy (both attributes to employee engagement), were positively related to engagement and job satisfaction (Skaalvik & Skaalvik, 2014).

A study of banking specialists by Yalabik, Rayton, and Rapti (2017) concluded that job satisfaction is linked to the facets of work engagement - vigor, dedication, and absorption. The study emphasized that when employees are satisfied with the job, the employees are fully engaged in the work (Yalabik et al., 2017). The study was supported by previous findings of Bakker et al., (2007) regarding work engagement.

Job Satisfaction and Turnover Intention

Turnover intention and turnover continue to be of interest to organizational leaders and researchers. Research has shown that there are many predictors of turnover intention, one of which is job satisfaction. Because research reveals that teachers leave the job after three years of teaching (as cited in Skaalvik & Skaalvik, 2011), job satisfaction is investigated in this study since it is claimed to be a highly salient antecedent of turnover and turnover intention (Lambert et al., 2001). Factors influencing job satisfaction include job resources such as pay and compensation, the work itself, supervision, opportunities of promotion, peer support, and working conditions. Overall, studies has shown that there is a significant and negative relationship between job satisfaction and turnover intention (Aydogdu & Asikgil, 2011).

A study by Reio and Segredo (2013) of middle school teachers in the Midwestern United States found there was a relationship between job satisfaction and turnover intention. The hierarchical regression analysis found that when the teachers had successful classroom
experiences, that included mentoring and a commitment to the school, there was less intention for turnover.

Customer service representatives in telecommunications, food service, clothing retail, and entertainment were studied in the southeastern United States to investigate emotional dissonance and turnover intention among the employees of service industries (Abraham, 1999). The principal finding of the study was that emotional dissonance led to job dissatisfaction and influenced thoughts of turnover intention (Abraham, 1999).

Work Engagement and Turnover Intention

An employee who is well engaged at work may find it difficult to leave because they would have already had high energy invested in their job roles resulting in strong work performance. In other words, employees may have a hard time leaving because of high job involvement that gives feeling of work pride and inspiration (Schaufeli & Salanova, 2007). To find a new job means starting over and could involve significant risks that an employee might be hesitant to take (Halbesleben & Wheeler, 2008).

A study by Barbosa de Oliveira and da Costa Rocha (2017) of public and private organization employees found that the relationship between work engagement and turnover intention was significant and negatively correlated. The study demonstrated that good human resource practices increase employee engagement and decreased turnover intention (Barbosa de Oliveira & da Costa Rocha, 2017).

A study conducted by Liu, Cho, and Putra (2017) surveyed a group of United States restaurant workers. The study concluded that positive work engagement decreased turnover intention.
Clarke (2012) studied the retention of teachers in the state of North Carolina. Her dissertation study found that resources such as continuing education and professional development were important aspects for the teachers to have increased work engagement and decreased turnover intention.

Career and Technical Education Teacher Turnover Intention

Few studies have been done on the turnover intention and retention of secondary CTE teachers (Ruhland, 2001). Ideas have been investigated in ways to retain teachers through such programs as teacher mentoring; however, the factors influencing teachers to leave the profession are not known (Ruhland, 2001).

A study by Ruhland (2001) investigated the turnover and retention of secondary CTE teachers; the CTE teachers taught in the business classes in secondary education. The study found there was a statistically significant difference between teachers leaving the profession and those who stayed; the teachers who stayed in the profession were committed to teaching, and they were highly engaged in their work (Ruhland, 2001). The most important factor for teachers staying in the profession was a positive work environment (Ruhland, 2001).

The purpose of research by Song et al. (2013) was to analyze relationships between the organizational culture, job autonomy, and career and technical (CTE) teacher turnover intention. A survey of 2,600 CTE teachers identified through the Oklahoma CTE system was performed (Song et al., 2013). The study concluded teachers with high levels of work engagement have a greater commitment to their school district and share information in their workplace; the study also found that school support influenced work engagement of teachers (Song et al., 2013).

CTE teachers are difficult to replace because they come from business and industry, and
it is especially difficult to replace the business and industry professionals because the schools must compete with the industry in the area of salaries (Song et al., 2011). The health care industry is a perfect example of the critical competition between the salaries of a health care worker and that of a health science teacher (Song et al., 2011). Teacher turnover can be attributed to a non-supportive work environment leading to teacher dissatisfaction (Song et al., 2011). The study found that teachers with a supportive learning community demonstrated less of a desire to leave the profession (Ruhland, 2001; Song et al., 2011).

Very few studies have been conducted with CTE teachers and teacher turnover intention. Even fewer studies have been conducted on health science teachers under the career and technical umbrella. A study conducted by Clarke (2012) of South Carolina health science CTE resonated the retention problems identified throughout the literature on teacher attrition and retention. Clark’s (2012) conclusion, using the ANOVA test, demonstrated statistically significant differences in teacher preparation, compensation, mentoring, school facilities, classroom equipment, and continuing education for the teachers. Over a five-year period, South Carolina schools retained only 116 of 397 health science teachers (Clarke, 2012). While Clark’s study investigated teacher attrition and retentions, the current study examined turnover intention of teachers in relation to work engagement and job satisfaction.

Summary

Chapter 2 reviewed the literature on work engagement, satisfaction, and turnover intention of health science teachers. The current study was necessary to analyze the constructs, providing possible recommendations to improve the retention rate of teachers; therefore, examining the effect of engagement and satisfaction on turnover intention was crucial.
The mindset of teachers is invaluable, as decisions are made to stay in the field of teaching or leave the teaching field to their original health care profession. Health science teachers come from a variety of health professions including nursing and clinical laboratory science. Keeping these teachers in the classroom is crucial for the future of health care. Examining the levels of job satisfaction, work engagement, and turnover intention may lead to creation of new ideas for decreasing turnover intention in the teaching profession. Chapter 3 describes the method used in the current study to determine the relationship between job satisfaction, work engagement, and turnover intention.
CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

The purpose of this study is to investigate the relationships between the constructs of job satisfaction, work engagement, and turnover intention of Career and Technical Education (CTE) health science teachers. The study is a correlational survey design for examining the possible relationships among the constructs. An online survey was provided to the full-time health science teachers in the state of Texas. The compiled data was used to examine the relationships between the variables. An online survey to the full-time health science teachers in the state of Texas will be used to compile data to examine the relationships between the variables. A description of the quantitative research design is explained, along with the population, sample, and the research instruments.

Research Design

The current study is a quantitative survey research design and will use correlation to examine the possible relationships between the constructs as represented in the following research questions and hypotheses:

This study was a survey research design using correlation to examine the possible relationships between the constructs as represented in the following research question:

1. What are the relationships between job satisfaction, work engagement, and turnover intention of health science teachers?
2. Do job satisfaction and work engagement predict turnover intention of health science teachers?
3. Does work engagement moderate the relationship between job satisfaction and turnover intention?

In order to answer the research questions, the following hypotheses were addressed:
H1a: Intrinsic job satisfaction is positively related to work engagement.
H1b: Extrinsic job satisfaction is positively related to work engagement.
H1c: Intrinsic job satisfaction is negatively related to turnover intention.
H1d: Extrinsic job satisfaction is negatively related to turnover intention.
H1e: Work engagement is negatively related to turnover intention.
H2: Job satisfaction and work engagement predict turnover intention.
H3: Work engagement moderates the relationship between job satisfaction and turnover.

A correlational quantitative survey research design was chosen to explore the possible relationships among the variables. Quantitative survey research allows data to be collected from a large number of people using statistics to identify patterns or trends in a certain population and to generalize a finding (Bryman, 2012). Quantitative research is based on the sample being a representation of the population (Bryman, 2012).

Population and Sample

This study pertains to the health science field particularly in CTE in the United States. The target population includes full time health science teachers in the United States. The sample of the population to be studied is the health science teachers in the state of Texas. Health science teachers must have work experience in a healthcare profession previously to teaching in this area. Additional requirements for health science teachers may vary from state to state. For the current study, teachers are required to have at least two-years of full-time work experience in a healthcare profession and must have an associate or bachelor degree within the field they have been working. The study sample will consist of current full-time health science teachers in public secondary independent school districts across the state of Texas with one year of health science
teaching experience. This information will be provided by a public information request (PIR) from the Texas Education Agency (TEA). The list of health science teachers will be from the 2017–2018 school year and includes all the teachers instructing in the health science courses of Principles of Health Science, Health Science Theory, Health Science Clinical, Medical Terminology, Health Informatics, Practicum in Health Science, and Extended Practicum in Health Science (Texas Education Agency, TEA, 2017). The school districts vary in size from Conference 1A (105 students) to Conference 6A (approximately 2,150 students) based on University Interscholastic League (UIL) organization, with larger school districts having more than one full-time health science teacher.

Sample Size

Sample size is important for all empirical studies; the purpose of which is to make conclusions about a population from a sample. Sample size may be estimated by using rule-of-thumb sample size estimates or statistical programs (Wolf, Harrington, Clark, & Miller, 2013). Several factors may affect sample size such as the type of model and missing data (Wolf et al., 2013). However, an acceptable rule-of-thumb for factor analysis is 300 or more cases (Schumacker & Lomax, 2016; Wilson Van Voorhis, & Morgan, 2007).

The sample size must also be large enough to substantiate the multiple regression analysis. From research, the adage, that the simplest rule of thumb is the bigger the sample size, the better the outcome of the study. The larger the sample size, the greater the representation of the population (Bryman, 2012). Less sampling error will occur with a larger sample population (Bryman, 2012). The common rule of thumb is ten to twenty participants for each independent variable (Keith, 2015). Using this rule, if the study has two independent variables, there should
be at least 20 to 40 participants (Keith, 2015). This study had two independent variables and met this rule of thumb with a sample size of 250.

External Validity

External validity is concerned with whether the results of a study can be generalized beyond the research addressed in this study (Bryman, 2012). The sample will be of full-time health science teachers from the TEA data collection for the 2017–2018 school year. This study can be reproduced with another group of health science teachers from any other state in the United States. Other researchers will be able to generalize the findings of this research beyond the participants that make up this sample.

Data Collection

The process of data collection will begin with approval by the University of North Texas (UNT) Institutional Review Board (IRB) (see Appendix A) on human subject research participants. A consent form, needed for the information gathering, included the procedures for data collection and confidentiality from each individual (Appendix B).

After approval by the IRB, the data was collected through the web-based software, Qualtrics. The survey instrument used for this study was comprised of a combination of three questionnaires: 1) the Minnesota Satisfaction Survey (MSQ) short version, 2) the Utrecht Work Engagement Scale (UWES-9), and 3) the Michigan Assessment of Organizations Questionnaire (MAOQ) subscale of turnover intention. The questionnaires provided data appropriate to the study regarding job satisfaction, work engagement, and turnover intention. The online survey also included an informed consent form (see Appendix B) and a section on demographics (see
Appendix C). The section on demographics allows a description on each participant. The demographics data provided information on trends, for example, in certain age groups and years of experience.

Surveys were chosen because they are used to gain information quickly and easily from the population sample (Bryman, 2012). Electronic surveys have been found to result in higher response rates than the traditional United States postal service mail route (Baruch & Holtom, 2008). Low response rates have been found due to failure to deliver the questionnaire and failure of participants to respond (Baruch & Holtom, 2008). The researcher must perform due diligence during the preparation process by obtaining updated email addresses for the population sample (Goetz, 2016). Explaining to the participants the end goal of the research will initiate responses from the participants (Goetz, 2016). The explanation of the end goal of the research will be within the body of the email sent to each participant.

Following the creation of the online format, the health science teachers currently listed as full-time with the TEA received a letter of introduction (see Appendix D) explaining the importance of the survey, as well as the benefits to the participants for completing the survey. Confidentiality will also be explained as to how the data will be collected, analyzed, and reported. Completion of the questionnaire was estimated to take approximately 10–15 minutes.

Next, a personal email was sent to the email address on file to the independent school district for the health science teacher. Personal emails have been found to be more successful in retrieving responses from participants (Porter & Whitcomb, 2003; Muñoz-Leiva, Sánchez-Fernández, Montoro-Ríos, & Ibáñez-Zapata, 2010). Based on research by Muñoz-Leiva et al. (2010) reminder emails should be sent every ten days, totaling three reminder emails; therefore, after the first email, three more emails reminders were sent. Sampling occurred for
approximately six weeks during spring 2018. The questionnaires not returned within the time allotted will be sent one additional reminder email (Porter & Whitcomb, 2003) to the participants encouraging completion of the questionnaire, while thanking those that already participated.

It has been found that survey research is encouraged when participants are provided some type of incentive for completion of online surveys. A study of participants completing a questionnaire after a clinical trial study, proved to be very effective when using incentives. All participants were given a 1 in 20 chance of winning a gift card for completing the questionnaire. The results of the study concluded with an 11.1% increase in response rates for completed questionnaires and that the incentive was effective (Morgan, Rapee, & Baker, 2017). All participants in this survey were encouraged to complete the questionnaire with an incentive of a chance to win a $20 Amazon gift card. Participants were given a 1 in 20 chance to win.

Instrumentation

This quantitative research design will utilize the MSQ for survey questions regarding job satisfaction, the Utrecht Work Engagement Scale (UWES-9) for work engagement, and the Michigan Organizational Assessment Questionnaire (MOAQ) subscale for turnover intention. A description of each survey tool follows.

Minnesota Satisfaction Questionnaire (MSQ)

Job satisfaction provides an overall feeling of job well-being (Moe, Pazzaglia, & Ronconi, 2010). Weiss, Dawis, and England (1967) developed the Manual for the Minnesota Satisfaction Questionnaire (MSQ) in 1967 to survey individuals on job satisfaction (Toker, 2011). The MSQ has two formats, a long form containing 100 questions and a short form, containing 20 questions (Weiss et al., 1967). The short form of the MSQ was created to measure
satisfaction based on the Herzberg two-factor theory (Weiss et al., 1967). The short form has been used in studies by Hancer and George (2003); Swafford and Legg (2009); Toker (2011); and Asekun (2016).

The short form survey can be analyzed on three scales: the intrinsic satisfaction, the extrinsic satisfaction, and general satisfaction (Weiss et al., 1967). All three subsets are measured by the 20 survey questions (Hancer & George, 2003; Toker, 2011). All 20 questions are combined for the general satisfaction (Weiss et al., 1967). The survey is designed with a 5-point Likert scale, ranging from 1, not satisfied, to 5, extremely satisfied (Weiss et al., 1967; Wanous, Reichers, & Hudy, 1997; Hancer & George, 2003; Swafford & Legg, 2009; Asekun, 2016). An example item of this scale is “On my present job, this is how I feel about the way my boss handles his/her workers.” The items in the MSQ short form, which were used in this study, are listed in Table 1 (Weiss et al., 1967).

Table 1

*The Minnesota Satisfaction Questionnaire*

<table>
<thead>
<tr>
<th>On my present job, this is how I feel about:</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Being able to keep busy all the time</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>2. The chance to work alone on the job</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>3. The chance to do different things from time to time</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>4. The chance to be “somebody” in the community</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>5. The way my boss handles his/her workers</td>
<td>Extrinsic satisfaction</td>
</tr>
<tr>
<td>6. The chance to do different things from time to time</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>7. The competence of my supervisor in making decisions</td>
<td>Extrinsic satisfaction</td>
</tr>
<tr>
<td>8. Being able to do things that don’t go against my conscience</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>9. The way my job provides for steady employment</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>10. The chance to do things for other people</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>11. The chance to tell people what to do</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>12. The chance to do something that makes use of my abilities</td>
<td>Intrinsic satisfaction</td>
</tr>
</tbody>
</table>

*(table continues)*
On my present job, this is how I feel about:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>The way company policies are put into practice</td>
<td>Extrinsic satisfaction</td>
</tr>
<tr>
<td>14.</td>
<td>My pay and the amount of work I do</td>
<td>Extrinsic satisfaction</td>
</tr>
<tr>
<td>15.</td>
<td>The chances for advancement on this job</td>
<td>Extrinsic satisfaction</td>
</tr>
<tr>
<td>16.</td>
<td>The freedom to use my own judgment</td>
<td>Intrinsic satisfaction</td>
</tr>
<tr>
<td>17.</td>
<td>The working conditions</td>
<td>General question</td>
</tr>
<tr>
<td>18.</td>
<td>The way my co-workers get along with each other</td>
<td>General question</td>
</tr>
<tr>
<td>19.</td>
<td>The praise I get for doing a good job</td>
<td>Extrinsic satisfaction</td>
</tr>
<tr>
<td>20.</td>
<td>The feeling of accomplishment I get from the job</td>
<td>Intrinsic satisfaction</td>
</tr>
</tbody>
</table>

Note. *All 20 questions measure general satisfaction.

The MSQ has been widely used as a measure of job satisfaction with valid results (Wanous et al., 1997; Hancer & George, 2003; Swafford & Legg, 2009; Kabungaidze et al., 2016). Hirschfeld (2000) analyzed the validity of examining the intrinsic and extrinsic factors in the survey. The study found researchers could feel confident using the intrinsic and extrinsic subscales, along with the overall satisfaction scale.

Reliability was measured by the commonly used method known as Cronbach’s alpha. The computed Cronbach alpha measures between 1 and 0, with 1 interpreted as perfect internal reliability (Bryman, 2012; Gliem & Gliem, 2003). The alpha scores in Table 2 report the Cronbach’s alpha for several studies using the Minnesota Satisfaction Questionnaire. The lowest score was an alpha of .85, with other research at .90 or higher. The alpha scores reported by these researchers demonstrated the reliability of the questionnaire.

To the best knowledge of the researcher, no previous research utilized the MSQ for health science teachers; however, similar studies have been conducted using similar types of survey. Job satisfaction was studied in a group of teachers at special needs schools in South Africa (Strydom, Nortje, Beukes, Esterhuysse, & Westhuizen, 2012). The overall results using the questionnaire found that teachers had an average level of job satisfaction. Obtaining
individualized answers to job satisfaction demonstrates needs and values of each employee as to whether the employee is satisfied on the job (Weiss et al., 1967).

Table 2

_Cronbach’s Alpha in Job Satisfaction Studies Using the MSQ_

<table>
<thead>
<tr>
<th>Study Author(s)</th>
<th>Date</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hancer, M. &amp; George, R. T.</td>
<td>2003</td>
<td>.90</td>
</tr>
<tr>
<td>Hinic, D., Grubor, J., &amp; Brulic, L.</td>
<td>2017</td>
<td>.90</td>
</tr>
<tr>
<td>Hirschfeld, R. R.</td>
<td>2000</td>
<td>.85</td>
</tr>
<tr>
<td>Strydom, L., Nortje, N., Beukes, R., Esterhuyse, K., &amp; Van der Westhuizen, J.</td>
<td>2012</td>
<td>.90</td>
</tr>
<tr>
<td>Toker, B.</td>
<td>2011</td>
<td>.90</td>
</tr>
</tbody>
</table>

Utrecht Work Engagement Scale (UWES-9)

Work engagement is defined as a “positive, fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). Work engagement is described as a high level of energy and the ability to identify with one’s own work (Schaufeli & Bakker, 2004). The scale used to measure work engagement is the Utrecht Work Engagement Scale (UWES) created by Schaufeli et al. (2002). The UWES consisted of 17 items; however, after being revised, this measure of work engagement was then shortened to a 9-question survey with 3 items in each category called the UWES-9 (Schaufeli & Bakker, 2004; Skaalvik & Skaalvik, 2014). The 9-item survey is scored on a 7-point scale from 0, _never_, to 6, _always_. An example item of this scale is “When I get up in the morning, I feel like going to work.” Cronbach’s alpha of the UWES-9 included all nine questions and varied from 0.89 to 0.97 (Schaufeli & Bakker, 2004). Table 3 outlines I UWES-9 (Schaufeli & Bakker, 2004).
Table 3

The Utrecht Work Engagement Scale-9

<table>
<thead>
<tr>
<th>Questions</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. At my job, I feel bursting with energy</td>
<td>Vigor</td>
</tr>
<tr>
<td>2. At my job, I feel strong and vigorous</td>
<td>Vigor</td>
</tr>
<tr>
<td>3. I am enthusiastic about my job</td>
<td>Dedication</td>
</tr>
<tr>
<td>4. My job inspires me</td>
<td>Dedication</td>
</tr>
<tr>
<td>5. When I get up in the morning, I feel like going to work</td>
<td>Vigor</td>
</tr>
<tr>
<td>6. I feel happy when I am working intensely</td>
<td>Absorption</td>
</tr>
<tr>
<td>7. I am proud on the work that I do</td>
<td>Dedication</td>
</tr>
<tr>
<td>8. I am immersed in my work</td>
<td>Absorption</td>
</tr>
<tr>
<td>9. I get carried away when I’m working</td>
<td>Absorption</td>
</tr>
</tbody>
</table>

Schaufeli et al. (2002) validated the UWES across the world with the three-factor scale of vigor, dedication, and absorption. Vigor in work engagement is one’s willingness to invest in your own work and persist in that work, even when it is very difficult (Kulikowski, 2017). Dedication is how involved a person is in their work. The person is enthusiastic and inspired by the job that they perform (Kulikowski, 2017). The third characteristic of work engagement is absorption, where someone is so involved in the work being performed that time becomes distorted (Demerouti et al., 2001). The three factors analyzed had high reliability in relationship to work engagement Schaufeli et al., 2002). UWES-9 has proven a useful tool in engagement studies in many different settings (Klassen, et al, 2012; Schaufeli & Bakker, 2004).

A cross-national study was conducted examining 27 studies between 1999 and 2003 from 10 different countries using the three-factor UWES-9 with different occupational groups. The groups included teachers, police, and management (Schaufeli et al., 2006). The results of this study supported the use of the UWES-9 as opposed to the longer version of the UWES (Schaufeli et al., 2006). Cronbach’s alpha for the 9-item scale varied between .85 and .92 for the
10 countries where the studies surveyed the participants, demonstrating the reliability of the survey tool (Schaufeli et al., 2006). Table 4 lists additional Cronbach’s alpha results for studies using the Utrecht Work Engagement Scale-9.

Table 4

*Cronbach’s Alpha in Work Engagement Studies using the UWES-9*

<table>
<thead>
<tr>
<th>Study Author(s)</th>
<th>Date</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakker, A. &amp; Bal, M.</td>
<td>2010</td>
<td>.89</td>
</tr>
<tr>
<td>Karanika-Murray, M., Duncan, N., Pontes, H.M., &amp; Griffiths, M. D.</td>
<td>2015</td>
<td>.94</td>
</tr>
<tr>
<td>Kim, W.</td>
<td>2017</td>
<td>.98</td>
</tr>
<tr>
<td>Korunka, C., Kubicek, B., Schaufeli, W. B., &amp; Hoonakker, P.</td>
<td>2009</td>
<td>.86</td>
</tr>
<tr>
<td>Matteucci, M.C., Guglielmi, D. &amp; Lauermann, F.</td>
<td>2017</td>
<td>.93</td>
</tr>
<tr>
<td>Skaalvik, E. M. &amp; Skaalvik S.</td>
<td>2013</td>
<td>.90</td>
</tr>
</tbody>
</table>

The current study used the UWES-9 as one measurement tool, as it was found to be reliable in previous studies. Although previous studies have used this survey as a measure of teacher’s engagement, to date and to the best knowledge of the researcher, no study has used this measurement tool with health science teachers.

Turnover Intention Scale

The Michigan Organizational Assessment Questionnaire (MOAQ) was developed by Cammann, Fichman, Jenkins, and Klesh (1979) to analyze job satisfaction and includes the subscales of Hackman and Oldham’s (1976) job characteristics model (Bowling & Hammond, 2008). The MOAQ contains several subscales including the turnover intention subscale that were utilized in the current study for turnover intention and is from module two of the questionnaire (University of Michigan-Institute for Social Research, 1975).

The 3-item scale was designed to investigate the psychological state of the participants.
related to the issues regarding life at work (Reio & Segredo, 2013). The three questions are measured on a Likert 7-point scale with responses ranging from 1, *strongly disagree*, to 7, *strongly agree* (Abraham, 1999; Tourangeau et al., 2010). The items in the MOAQ subscale for turnover intention are listed in Table 5. The sub-scale has been used in several studies over the last several decades. Table 6 lists sample studies with a Cronbach’s alpha greater than .80.

Table 5

*Michigan Organizational Assessment Questionnaire Turnover Intention Subscale*

<table>
<thead>
<tr>
<th>Turnover Intention Subscale Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How likely is it that you will actively look for a new job in the next year?</td>
</tr>
<tr>
<td>2. I often think about quitting.</td>
</tr>
<tr>
<td>3. I will probably look for a new job in the next year.</td>
</tr>
</tbody>
</table>

Table 6

*Cronbach’s Alpha in Turnover Intention Studies using the MOAQ Turnover Intention Scale*

<table>
<thead>
<tr>
<th>Study Author(s)</th>
<th>Date</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abraham, R.</td>
<td>1999</td>
<td>0.88</td>
</tr>
<tr>
<td>Ali, N.</td>
<td>2008</td>
<td>0.98</td>
</tr>
<tr>
<td>Bowling, N. A. &amp; Hammond, G. D.</td>
<td>2008</td>
<td>0.84</td>
</tr>
<tr>
<td>Reio, T. G., Jr. &amp; Segredo, M.</td>
<td>2013</td>
<td>0.86</td>
</tr>
<tr>
<td>Tourangeau, A., Cranley, L., Spence Laschinger, H. K., &amp; Pachis, J.</td>
<td>2010</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Validity of Scales

Validity is defined as “the extent to which any measuring instrument measures what it is intended to measure” (Carmines & Zeller, 1979, p. 17). The validity of the scales is important for the reliability of the data collected (Bryman, 2012). If the scales are valid, then the reliability of being able to repeat the study with similar outcomes is sound (Carmines & Zeller, 1979). The
validity of the MSQ, the Utrecht Work Engagement Scale (UWES-9), and the MOAQ subscale for turnover intention must be measured and verified for research purposes.

Validity of the Minnesota Satisfaction Questionnaire (MSQ)

The short form of the MSQ (20 questions) will be used to measure job satisfaction among health science teachers. The validity of the long form inferred validity of the questionnaire short form (Weiss et al., 1967). There are two subscales within the MSQ, intrinsic job satisfaction and extrinsic job satisfaction. Studies have been conducted to determine if these subscales needed to be revised and it was concluded that the structure of the questionnaire was not significantly different between a revised version and the original version (Hirschfeld, 2000). Revision of the MSQ would not improve the validity of the questionnaire (Hirschfeld, 2000). The MSQ has been found valid with a satisfactory fit to the data in several studies (Zhang, Wu, Miao, Yan, & Peng, 2014; Hirschfeld, 2000). A study by Yeh (2013) was conducted on the constructs of tourism involvement, work engagement, and job satisfaction with hotel employees using the MSQ. The study demonstrated evidence of good model fit in the goodness of fit index (GFI), normal fit index (NFI), comparative fit index (CFI), and standardized root mean residual (SRMR) between the hypothesized relationships (Yeh, 2013).

Validity of the Utrecht Work Engagement Scale (UWES-9)

Schaufeli et al. (2006) studied the one factor and three factor models of the UWES-9 (short form) and both were found to be acceptable by factorial analysis. Data was collected from 10 different countries and found that the factorial validity of the UWES-9 was demonstrated using confirmatory factor analysis (CFA) (Schaufeli et al., 2006). The CFA models of goodness
of fit index (GFI), the root mean square of approximation (RMSEA), and the normal fit index (NFI), all demonstrated good fit for both factor models (Schaufeli et al., 2006; Seppälä, Mauno, Feldt, Hakanen, Kinnunen, Tolven, & Schaufeli, 2009).

In addition, research on five different studies regarding the factor structure of the UWES-9 was conducted (Seppälä et al., 2009). The research concluded the three-factor model had acceptable construct validity (Schaufeli et al., 2006; Seppälä et al., 2009). The study recommended the use of the UWES-9 in future studies as there were high correlations between the three factors, 0.83 to 0.97 (Seppälä et al., 2009). The result of the study, through the CFA results, did determine that work engagement, depending on the type of research, could be a one-dimensional or three-dimensional construct (Seppälä et al., 2009).

Validity of the Michigan Organizational Assessment Questionnaire (MOAQ)

The Michigan Organizational Assessment Questionnaire (MOAQ) subscale for turnover intention has been used in several studies over the last few decades. The MOAQ subscale for turnover intention was developed by Camman at al. (1979), to analyze job satisfaction; the scale has been used in numerous studies. The CFA for Abraham’s (1999) study of customer service representatives that included the MOAQ, demonstrated good fit with the RFI (relative fit index) and the NNFI (non-normed fit index). Bowling and Hammond (2008) performed a meta-analytic examination of the construct validity of the MOAQ and found the questionnaire to have valid construct measures.

Demographics

In the current study, the demographic data to be collected from health science participants in Texas include the following variables: gender, age, level of education, years of experience in
health science instruction, course(s) taught, and grades taught. Gender is a dichotomous variable, where participants check male or female. A large range grouping of age is recommended to decrease survey fatigue of the respondents (Fryrear, 2016). The age groups suggested are 18-24 years old, 25-34 years old, 35-44 years old, 45-54 years, 55-64 years, old and older than 65 years old (Fryrear, 2016). The level of education will be indicated by a check box for associate degree, bachelor degree, master’s degree, or Ph.D. Space will be provided for participants to state the name of the degree. Participants will be asked to state their years of work experience in their current teaching position. The participants will list the courses currently taught by them during the 2017–2018 school year. Participants will also report the grades taught at the secondary level.

Participants will be asked to indicate service in the role of health science student organization (HOSA, 2017) advisor. The CTE student organization is the HOSA-Health Care Professionals. A teacher being a HOSA-Health Care Professionals advisor is voluntary, but encouraged by the TEA CTE curriculum. Health science teachers can enroll students in the organization for the purpose of learning leadership skills. The health science curriculum encourages participation, but it is not required. The organization advisor status will also be a check box question with a yes/no answer.

According to the minimum state salary schedule for beginning teachers, the salary at zero years’ experience is $28,080 (TEA, 2018). The salary ranges for the demographic questions begins with a range of less than $30,000 and is based on the TEA ranges.

Data Analysis

Data collected were analyzed using CFA, Cronbach’s alpha, Pearson \( r \), and multiple regression analysis. The analysis was conducted using the 25th version of the SPSS® software
Confirmatory Factor Analysis (CFA)

CFA has become a tool used by many in psychological research, especially when looking at construct validity (Jackson, Gillaspy, Jr., & Purc-Stephenson, 2009). CFA tests the measures of a construct and if those measures are consistent with the researchers understanding of the construct (Schumacker & Lomax, 2016). CFA examines the constructs to see if a theoretical relationship exists between the observed and unobserved variables, to determine if the data collected fits the hypothesized measurement model (Schreiber, Nora, Stage, Barlow, & King, 2006). The CFA of each item in the MSQ, the UWES, and the MOAQ subscale for turnover intention will determine the construct validity of job satisfaction, work engagement, and turnover intention for this study.

The current study used the following fit indices to evaluate the CFA results. The fit indices were determined by the Chi square degrees of freedom ($\chi^2/df$ test), the SRMR, RMSEA, the Tucker-Lewis index, (also known as the non-normal fit index-NNFI), and the CFI. These model fit criteria are the most commonly used in research statistics (Schumacker & Lomax, 2016).

A significant chi-square value relative to the degrees of freedom will indicate that the observed and variance-covariance matrices are different (Schumacker & Lomax, 2016). Statistical significance in this calculation is interpreted as a difference due to sampling variations (Jöreskog & Sörbom, 1982; Schumacker & Lomax, 2016). Chi-square is sensitive to the sample
size. The larger the sample size, the more likely the statistic will result in a significant probability level (Schumacker & Lomax, 2016). The formula for chi-square includes the sample size; therefore, the chi-square is interpreted by comparing the resulted chi-square value with the tabled value for the degrees of freedom (Jöreskog & Sörbom, 1982; Schumacker & Lomax, 2016).

The goodness-of-fit models were used to analyze the model matrix. The SRMR acceptable level is < .05, which results in a good fit (Schumacker & Lomax, 2016). The RMSEA was used to analyze the degrees of freedom and sample size (Schumacker & Lomax, 2016). The theory of the RMSEA is that the more degrees of freedom, the more likely there is an increase in the number of variable relations in the model (Schumacker & Lomax, 2016). An RMSEA value of .05 to .08 indicates good fit (Chen, Curran, Bollen, Kirby, & Paxton, 2008). The CFI analyzes the degree of fit between the measurement model and the hypothesized model (Schumacker & Lomax, 2016). The Tucker-Lewis fit index, also known as the non-normed fit index (NNFI), is a good measure of low sample size. The fit model demonstrating 0.9 or 0.95 represents a good fit model (Schumacker & Lomax, 2016) a shown in Table 7.

Table 7

*Goodness-of-fit Model Criteria*

<table>
<thead>
<tr>
<th>Model</th>
<th>Acceptable level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chi-square</strong></td>
<td>Tabled chi-square level</td>
</tr>
<tr>
<td>Standardized root mean square residual (SRMR)</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Root mean square error of approximation (RMSEA)</td>
<td>.05 to .08</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>&gt;= 0.95</td>
</tr>
<tr>
<td>Tucker-Lewis fit index (TLI) (NNFI)</td>
<td>0 to 1</td>
</tr>
</tbody>
</table>

Validity of the Scales in this Study

For this study, the CFA values are listed in Table 8. Of the goodness-of-fit models tested,
two of the models tested for this research met the required model criteria. In order to create a better model fit, the two general job satisfaction questions were removed. The $\chi^2/df$ ratio is acceptable at 3.62 (Hooper, Coughlan, & Mullen, 2008). The SRMR was above the < .05 cutoff for the measure. An RMSEA between 0.8 and 0.1 is considered neither a good or bad fit and is least affected by sample size (Cangur & Ercan, 2015). The TLI of .796 is acceptable to researchers and least affected by sample size (Cangur & Ercan, 2015). However, the CFI is below the acceptable limits of < .95 at .812.

Table 8

*Goodness-of-fit Results for this Study*

<table>
<thead>
<tr>
<th>Model</th>
<th>Study Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>$1453.72, , df = 401, \chi^2/df = 3.62, , p &lt; .01$</td>
</tr>
<tr>
<td>Standardized root mean square residual (SRMR)</td>
<td>.124</td>
</tr>
<tr>
<td>Root mean square error of approximation (RMSEA)</td>
<td>.102</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>.812</td>
</tr>
<tr>
<td>Tucker-Lewis fit index (TLI) (NNFI)</td>
<td>.796</td>
</tr>
</tbody>
</table>

Reliability Analysis

Internal reliability was measured by a commonly used test known as Cronbach’s alpha. The statistic calculates the average of all the split-half reliability coefficients (Bryman, 2012). The computed Cronbach alpha will measure between 1 and 0, with 1 denoting perfect internal reliability (Bryman, 2012; Gliem & Gliem, 2003). A Cronbach alpha of 0 indicates no internal reliability (Bryman, 2012). A Cronbach’s alpha of at least .80, is indicative of an acceptable level of internal reliability (Bryman, 2012). The closer Cronbach’s alpha is to 1, the greater the internal consistency of the items in the questionnaire (Gliem & Gliem, 2003).
Data Analysis/Pearson $r$

Pearson $r$, which is the product moment correlation coefficient, will be used to measure the strength of the relationship between the three variables (Bryman, 2012). This statistic will determine the strength and presence of linear relationships between two variables, that is, job satisfaction and work engagement; job satisfaction and turnover intention; and work engagement and turnover intention.

Multiple Regression Analysis

Multiple regression is defined as a statistical method for combining multiple factors to analyze how the factors affect an outcome (Keith, 2015). Multiple regression supports the hypotheses for this research because the method evaluates the relationships between the factors by analyzing the moderated relationships of the factors (Jaccard & Turrisi, 2003). In the current study, the relationships between the variables will be analyzed using multiple regression. The independent variables are job satisfaction and work engagement, and the dependent variable is turnover intention.

Several sequences of sequential multiple regression analyses were performed to examine each variable in the model and determine its contribution to the outcome variable, turnover intention. Multiple regression analysis determined if relationships exist between the variables. Work engagement was entered first, followed by job satisfaction. The determination of the order of the variables is supported by research. If employees are not engaged in their work, then the employees are not satisfied with the job (Skaalvik & Skaalvik, 2014). When employees are not satisfied in the job, the employee lacks engagement in the work, leading to thoughts or actions of turnover intention (Tourangeau et al., 2010).
Assumptions of Multiple Regression Analysis

An important assumption in multiple regression is linearity (Osbourne & Waters, 2002; Keith, 2015). If linearity is violated, then the estimates such as standard errors, tests of statistical significance, may be biased. If the estimates are biased, then the estimates may not be reproducible in a true population (Williams, Grajales & Kurkiewicz, 2013; Keith, 2015).

Another assumption for multiple regression is each participant is drawn independently from the population. Each participant’s errors are independent from another participant (Keith, 2015). If this assumption is violated, statistically significant tests will not be accurate (Williams et al., 2013; Keith, 2015).

Homoscedasticity is a third assumption worth discussing. Homoscedasticity assumes that the residuals should spread out evenly across the levels of the independent variable (Osbourne & Waters, 2002; Keith, 2015). Violations of this assumption affects standard errors and statistical significance (Keith, 2015). Scatterplots assist in analyzing the data for this assumption (Keith, 2015).

The last assumption to mention is the assumption that errors are normally distributed (Osbourne & Waters, 2002; Keith, 2015). Regression analysis is robust to this violation; therefore, unless there is a small sample, the violation is not as serious (Keith, 2015).

Missing Data

Missing data can be handled by replacing the missing data, deleting the participants that have missing data or using statistical analysis (Graham, 2003; Schumacker & Lomax, 2016). Data can be missing completely at random (MCAR). In this case, the missing values are dispersed across all observations and a relationship does not exist between the missing values
The missing value(s) are a subset of the variable. Data can also be missing at random (MAR). In MAR, the missing values are distributed within one or more sub-values and not distributed randomly across all observations (Allison, 2002). The “missingness” (Keith, 2015, p. 526) is conditional on another variable (Keith, 2015). According to Allison (2002) if the missing data is determined to be MCAR, then pairwise or listwise deletion may be used to address the missing value cases. Additionally, listwise deletion is performed by deleting from the sample any participants’ surveys that have missing data; these observations become a subsample of the sample in MCAR. However, removing samples could lead to increased standard errors because of the smaller sample size. If the values are not MCAR, then imputation may be used to replace the values missing (Allison, 2002). Imputation is a process to input missing data with substituted data. However, imputation may lead to standard errors that are underestimated and incorrect statistical analyses (Allison, 2002).

The method of maximum likelihood (ML) may also be used for dealing with missing data (Keith, 2015; Schumacker & Lomax, 2016). Schumacker and Lomax (2016) recommend analyzing the data before adding missing data and after, so as to analyze the influence of missing data on the parameter estimates and standard errors.

Outliers can also be a problem for multiple regression, skewing the R squared results. The method used in this research was Cook’s distance by following the formula 4/n. One outlier was found and removed from the analysis. The R-squared change and the adjusted R-squared results were insignificant to the final multiple regression analysis with only an R squared difference of 0.001 between a regression with the outlier and a regression analysis without the outlier.

The research of the current study will analyze the removal of surveys with missing data
and the imputation process for missing data to determine which process will lead to minimal standard errors.

Additional Data Analyses Information

Multicollinearity may occur when a high level of correlation occurs between the independent variables (Kline, 2012; Keith, 2015; Schumacker & Lomax, 2016). Erroneous results may occur if multicollinearity exists in the analyses (Keith, 2015). To analyze possible multicollinearity, which may affect the regression coefficients and standard errors, collinearity diagnostics was analyzed using the SPSS® software. The Pearson \( r \) correlations discovered there was not a high correlation among any of the variables.

Summary

This chapter introduced the methodology that will be used to analyze the relationships between work engagement, job satisfaction, and turnover intention. Information on research design, population, sampling, data collection, validity, and instrumentation were presented. Data collection was completed via Qualtrics. The analysis procedures for the study were identified as Cronbach’s alpha, Pearson \( r \), CFA, and multiple regression analysis.
CHAPTER 4
RESULTS

This study was created to investigate the relationships between job satisfaction, work engagement, and turnover intention of health science teachers. The data was collected from 250 health science teachers across the state of Texas, using an online survey software, Qualtrics©. This chapter describes the results of this online survey, including demographic data of the teachers that completed the survey. This chapter also includes the descriptive statistics, Pearson’s correlation coefficients, along with the multiple regression analysis of the variables.

Demographic Results

Data was collected from currently employed health science teachers across the state of Texas through the Qualtrics© online survey system (see Appendix E). Of the 900 email requesting completion of the survey, 250 teachers completed the survey. This resulted in a response rate of 27.8%. The sample population consisted of 89.6% female and 10.4% male respondents. Most respondents to the survey were 45–54 years (37.6%), followed by 35–44 years of age (29.6%). The age group of 55-64 years old was 23.6% of the participants surveyed. The age group of 25–34 years old was 5.2% of the population surveyed. Four percent of the health science teacher respondents were 65 years of age or older.

Over 40% of the respondents hold a bachelor’s degree, and 34% a master’s degree. Doctorate degrees were held by 6.77% of the population surveyed. Ten percent had an associate’s degree which is allowed now under the rules of the Texas Education Agency for instruction in the health science courses (TEA, 2018). Of those surveyed, 0.4% were in the “Other” category. I speculated that the “other” category includes teachers who are certified in
other areas and are teaching in the health science arena. This is based on my experience at the Texas Education Agency.

Independent school districts in Texas have salary scales providing additional monies for those who hold higher degrees. Most health science teachers have a degree, and when they go back to school to become certified as health science teachers the courses taken can be a portion of a master’s degree in education. This may explain the 34% of teachers having a master’s degree.

The years of experience requested in the survey demonstrated the highest percentage at one to three years of teaching experience, at 28.7%. The year ranges of four to six years and 11–20 years, the percentages were close to the same at about 22%. The percentage of teachers with seven to 10 years of experience was 15.5%. This indicates many new teachers in the field of health science responded to the survey. About 10.8% of the teachers surveyed had 21 or more years of experience.

Over 75% of the respondents are HOSA-Health Care Professionals advisors. This organization is devoted to career and technical education leadership training in secondary and postsecondary schools. Students are provided opportunities to learn and experience leadership opportunities through conferences, up to and including the national level. An advisor spends many hours with students preparing them for the conferences. The conferences include leadership skills, competitive event skills in areas such as emergency medical technician and nurse aide, and team events such as debate. The hours an advisor spends with the students in the organization demonstrates a dedication to the health science teaching profession by medical professionals.

All of the respondents taught more than one grade level between Grades 8 through 12.
Almost 30% of the respondents taught the senior grade level. The next highest grade level was Grade 11, where health science teachers may teach the science courses of Medical Microbiology and a clinical course. Within all the grade levels, 8 through 12, 13 courses are taught under the health science curriculum. Most teachers in the survey instructed in the Principles of Health Science course (the introductory course) and the Practicum in Health Science. The practicum course is similar to a capstone course, where students may be completing clinical rotations in a clinical setting such as a hospital or actually earning a certificate in certified nurse aide or another health care area, readying them for the job market upon high school graduation. A few teachers taught in the eighth grade, which would also be the principles of health science course at that level. Students are able to explore options for career and technical education at a younger age and may opt in or out depending on their level of interest when entering the upper grade levels. Worth noting, over 100 teachers instruct in the medical terminology course. Many independent school districts have an agreement with a local college and provide college credit for the medical terminology course. Other courses taught in the health science career and technical education career cluster include mathematics for health professions, extended practicum in health science, health science theory, health science clinical, world health research, health informatics, anatomy and physiology, medical microbiology, and pathophysiology. The courses of anatomy and physiology, medical microbiology, and pathophysiology provide additional science credit to students when taught by a teacher with a science certification.

Thirty-eight percent of the health science teacher respondents work in the professional area of their certification. Healthcare professionals may work in the field in a variety of positions. This includes part-time on the weekends or in the summer to cover full-time employees’ vacations. Some healthcare workers stay in their field and choose to work while
teaching to keep their licensure or certification active. Professional development is offered by their healthcare employer and is necessary to hold licensures or certifications.

Fifty percent of the respondents reported a yearly salary range of $50,000 to $59,999. According to the Bureau of Labor Statistics [BLS] (2017), the average salary of a registered nurse in Texas is $72,000, which may explain why a significant number of medical professionals still work in their original healthcare field. This is especially true when the majority of the health science teachers are registered nurses (Park, 1999).

Additionally, 24.1% of the teacher’s surveys reported a salary of $40,000 to $49,999. The participants of the survey who earn $60,000 to $69,999 was about 19.7%. Less than 5% of the respondents surveyed earned $39,999, while 2.4% earned $70,000 to $79,999. Approximately 0.4% of the 250 respondents earned $80,000 or more per school year.

Descriptive Statistics

The scores on the job satisfaction variable, were based on a Likert scale of 0 being not satisfied to 5 being extremely satisfied. The mean score for overall job satisfaction was 3.73. The mean score for the extrinsic job satisfaction subscale was 3.12 with a standard deviation of 0.93. The mean score for the intrinsic job satisfaction subscale was 4.04 with a standard deviation of 0.65. In general, health science teachers are more intrinsically satisfied with their jobs. For example, teachers value recognition for a job well done, increased and challenging responsibilities, and job autonomy. Work engagement was measured on a Likert scale of 0 being never to 6 being always. Of the work engagement subscales and of all the variables, dedication had the highest mean score of 5.74. This means that, to a great extent, health science teachers are involved at work and are inspired and enthusiastic about teaching. Overall, teachers are more
engaged at work than being satisfied with the job. Table 9 provides the summary of the means and standard deviations for all of the variables in the research study.

Table 9

Summary of Means and Standard Deviations for Research Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>$n$</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic Job Satisfaction</td>
<td>250</td>
<td>3.12</td>
<td>.93</td>
</tr>
<tr>
<td>Intrinsic Job Satisfaction</td>
<td>250</td>
<td>4.04</td>
<td>.65</td>
</tr>
<tr>
<td>Work Engagement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Engagement-Vigor</td>
<td>250</td>
<td>5.19</td>
<td>1.25</td>
</tr>
<tr>
<td>Work Engagement-Dedication</td>
<td>250</td>
<td>5.75</td>
<td>1.07</td>
</tr>
<tr>
<td>Work Engagement-Absorption</td>
<td>250</td>
<td>5.70</td>
<td>1.03</td>
</tr>
<tr>
<td>Turnover Intention</td>
<td>250</td>
<td>3.49</td>
<td>1.93</td>
</tr>
</tbody>
</table>

Note. Job satisfaction items were on a 5-point Likert scale, 1, *not satisfied*, to 5, *extremely satisfied*; work engagement items were on a 7-point Likert scale, 0, *never* to 6, *always*; and turnover intention items were on a 7-point Likert scale, 1, *strongly disagree* to 7, *strongly agree*.

Pearson’s Correlation Coefficient

Pearson’s correlation coefficient is the product moment correlation coefficient, and was used to measure the presence and the strength of the relationship between the job satisfaction, work engagement, and turnover intention variables. This statistic determined the strength and presence of linear relationships between two variables, that is, job satisfaction and work engagement; job satisfaction and turnover intention; and work engagement and turnover intention (Bryman, 2012). The correlation coefficient values whether the variables are positively or negatively correlated with each other in the study (Bryman, 2012). The Pearson $r$ is a value obtained from -1 to +1. The closer the number is to 1, the greater the correlation (Bryman, 2012). A weak correlation is a Pearson $r$ value of +/- .21 to .35, a moderate correlation is +/- .36 to .67, and a strong correlation is +/- .68 to .90 (Prion & Haerling, 2014). The values obtained in this study are in Table 10.
### Table 10

**Pearson Correlation Coefficient**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$n$</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job Satisfaction</td>
<td>250</td>
<td>4.04</td>
<td>.65</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Job Satisfaction</td>
<td>250</td>
<td>3.12</td>
<td>.93</td>
<td>.690**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Work Engagement</td>
<td>250</td>
<td>5.18</td>
<td>1.25</td>
<td>.603**</td>
<td>.500**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Work Engagement</td>
<td>250</td>
<td>5.74</td>
<td>1.07</td>
<td>.535**</td>
<td>.426**</td>
<td>.818**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Work Engagement</td>
<td>250</td>
<td>5.69</td>
<td>1.02</td>
<td>.442**</td>
<td>.284**</td>
<td>.678**</td>
<td>.774**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. Turnover Intention</td>
<td>250</td>
<td>1.93</td>
<td>1.93</td>
<td>-.529**</td>
<td>-.617**</td>
<td>-.452**</td>
<td>-.407**</td>
<td>-.295**</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.** Correlation is significant at the .01 level (2-tailed). Job satisfaction items were on a 5-point Likert scale, 1, *not satisfied*, to 5, *extremely satisfied*; work engagement items were on a 7-point Likert scale, 0, *never* to 6, *always*; and turnover intention items were on a 7-point Likert scale, 1, *strongly disagree* to 7, *strongly agree.*

### Table 11

**Cronbach’s Alpha for Job Satisfaction, Work Engagement, and Turnover Intention Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction</td>
<td>.933</td>
</tr>
<tr>
<td>Intrinsic Job Satisfaction Subscale</td>
<td>.906</td>
</tr>
<tr>
<td>Extrinsic Job Satisfaction Subscale</td>
<td>.873</td>
</tr>
<tr>
<td>Work Engagement</td>
<td>.933</td>
</tr>
<tr>
<td>Work Engagement-Vigor Subscale</td>
<td>.892</td>
</tr>
<tr>
<td>Work Engagement-Dedication Subscale</td>
<td>.894</td>
</tr>
<tr>
<td>Work Engagement-Absorption Subscale</td>
<td>.775</td>
</tr>
<tr>
<td>Turnover Intention</td>
<td>.921</td>
</tr>
</tbody>
</table>
Not all of the variables were positively correlated. Turnover intention was negatively correlated with all variables. This demonstrates that as there was an increase in the value of job satisfaction and work engagement, and there was a decrease in the value of turnover intention. Therefore, it is important to ensure that teachers are satisfied and engaged at work to reduce any intentions they may have to leave the job. The lowest positive correlation was between extrinsic job satisfaction and work engagement-absorption at \( r = .284 \). The correlations of all the variables were significant at the \( p < .01 \) level.

Reliability Results

The reliability of the study was measured using Cronbach’s alpha, which calculates the average of all split-half reliability coefficients (Bryman, 2012). A result of 1 is interpreted as perfect internal reliability (Gliem & Gliem, 2003), while an alpha of 0 indicates no internal reliability (Bryman, 2012). The Cronbach’s alpha results for the job satisfaction (intrinsic job satisfaction and extrinsic job satisfaction subscales), work engagement (vigor, dedication, and absorption subscales), and turnover intention were all > .80, indicating good reliability. Work engagement-absorption subscale had the lowest reliability score of .775, indicating acceptable internal reliability (Nunnally, 1994). There are different interpretations of acceptable values of Cronbach’s alpha and they have a range of .70 to .95 (Tavakol & Dennick, 2011). Table 11 lists the Cronbach alpha results for the variables in this study.

Assumptions of Multiple Regression Results

Multiple regression was performed as part of this analysis and when conducting this type of analysis, assumptions must be met to promote the validity of the results. The predictor
variables, job satisfaction and work engagement, in this case, should be quantitative in nature.

Multicollinearity is another assumption that must be addressed when performing an analysis using multiple regression. Multicollinearity is a problem when the independent variables correlate at a level greater than .80 (Keith, 2015). When the variables are highly correlated, multicollinearity exists. The correlation matrix in Table 11 shows the results of the Pearson correlation and none of the variables were highly correlated with each other in this study. Other correlations between the predictor variables did not demonstrate high correlation and therefore did not violate the assumption rule for multiple regression.

Collinearity diagnostics were run with the multiple regression analyses. The VIF (variance inflation factor) is “an index of the amount that the variance of each regression coefficient is increased” (Cohen et al., 2013, p. 423). A rule of thumb for collinearity is that a VIF of 10 or more indicates that multicollinearity may exist (Keith, 2015). The VIF results for the collinearity statistics in this study were between 1 and 10; therefore, multicollinearity did not exist in the multiple regression analysis. Outliers were evaluated using the Cook’s distance method in SPSS. The results obtained found one outlier that did not affect the results of the multiple regression analysis. The difference in the R-squared change was .001.

![Figure 1. P-P plot of the independent and dependent variables.](image)

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Normality of the regression analysis is demonstrated in the P-P Plot in Figure 1, and demonstrates that the errors, otherwise known as residuals are evenly distributed (Keith, 2015). The assumption of normality has been met because the residuals approximate a normal curve.

Results for Research Questions

The relationship between job satisfaction, work engagement, and turnover intention was completed using the Pearson Product-Moment Correlation Coefficient (Pearson $r$). The Pearson $r$ for the relationship between intrinsic job satisfaction and turnover intention was $r = -529$. The Pearson $r$ for the relationship between extrinsic job satisfaction and turnover intention was $r = -.617$. These results indicated that the relationship was negative suggesting that as both intrinsic and extrinsic job satisfaction increase, the intention to leave the job decreases. The relationship between intrinsic job satisfaction and turnover intention, and extrinsic job satisfaction and turnover intention, were statistically significant at $p < .01$. The relationships between work engagement-vigor ($p < .01, r = -.452$), work engagement-dedication ($p < .01, r = -.407$), work engagement-absorption ($p < .01, r = -.295$) and turnover intention were similar, again showing that as work engagement increases, turnover intention decreases.

As stated in the literature review, research supported the idea that as work engagement increased, turnover intention decreased. Tourangeau et al., (2010) found employees had a decreased intention to leave the job if strong work relationships existed, along with a feeling of personal accomplishment. Skaalvik and Skaalvik (2011) also supported the ideas of increased work engagement leading to decreased turnover intention with a study on schoolteachers.

The relationship between job satisfaction and work engagement was moderate and positive, according to the Pearson $r$ correlation coefficients and all were statistically significant.
at $p < .01$. This indicates that as health science teachers are satisfied with their job, their work engagement increases. The more satisfied teachers are with their work, the higher will be their engagement levels on the job, in that, they will be more dedicated, enthusiastic, and involved personally with their teaching. The lowest correlation was between turnover intention and work engagement-absorption ($p < .01, r = -.295$). A teacher who is absorbed in the work has a difficult time separating him or herself from the roles and responsibilities of being a teacher.

H1: Intrinsic Job Satisfaction is Positively Related to Work Engagement

The Pearson correlation coefficient for intrinsic job satisfaction in relationship to work engagement-vigor was strongly and positively correlated ($p < .01, r = .603$). Intrinsic job satisfaction and work engagement-dedication was also strongly and positively correlated at ($p < .01, r = .535$). Intrinsic job satisfaction and work engagement-absorption was moderately and positively correlated at ($p < .01, r = .442$). As intrinsic job satisfaction values increase, work engagement values increase. When teachers are intrinsically satisfied on the job they have the opportunity to work alone, perform different tasks on occasion, having the opportunity to tell others what to do, and an opportunity to try their own methods for performing the job. All of these intrinsic characteristics give the teacher autonomy at the school district. Intrinsic job satisfaction promotes positive work engagement.

H1b: Extrinsic Job Satisfaction is Positively Related to Work Engagement

The Pearson correlation coefficient for extrinsic job satisfaction and with both work engagement-vigor ($p < .01, r = .500$) and work engagement-dedication ($p < .01, r = .426$) was moderate and positive. However, the relationship between work engagement-absorption ($p < .01$,
and extrinsic job satisfaction was positive but weak. Although both intrinsic and extrinsic job satisfaction are positively related to work engagement, overall, the relationship between intrinsic job satisfaction and work engagement was stronger than the relationship between extrinsic job satisfaction and work engagement. When teachers are satisfied with the work environment, autonomy, and good work relationships they are engaged at work. The examples of extrinsic job satisfaction include factors such as leadership, policies, procedures, salary, and job advancement possibilities. Extrinsic job satisfaction is important to the overall job satisfaction, but findings from this study revealed that intrinsic job satisfaction was more strongly correlated with work engagement.

H1c: Intrinsic Job Satisfaction is Negatively Related to Turnover Intention

The Pearson Correlation coefficient value for intrinsic job satisfaction and turnover intention is \( r = -.529 \). This result demonstrates a negative relationship between intrinsic job satisfaction and turnover intention. The intrinsic factors of job satisfaction include good working relationships, autonomy, and a good work environment. If these factors are not met for a teacher, then the intention to leave the job will increase. The correlation results concluded that these intrinsic job satisfaction factors are being met at the school districts by the educational leadership. As intrinsic job satisfaction values increase, turnover intention values decrease.

H1d: Extrinsic Job Satisfaction is Negatively Related to Turnover Intention

The correlation between extrinsic job satisfaction and turnover intention was \( r = -.617 \). This result showed a significant negative correlation between extrinsic job satisfaction and turnover intention. This result demonstrated a negative relationship between the extrinsic job
satisfaction and turnover intention similar to intrinsic job satisfaction; however, extrinsic job satisfaction demonstrates a stronger negative relationship. When compared to intrinsic job satisfaction, if teachers are not extrinsically satisfied, their intention to leave the job will be stronger.

H1e: Work Engagement is Negatively Related to Turnover Intention

The relationship between work engagement-vigor and turnover intention was found to be moderately and negatively correlated, $p < .01, r = -.452$. The relationship between work engagement-dedication and turnover intention was found be moderately and negatively correlated, $p < .01, r = -.407$. The relationship between work engagement-absorption and turnover intention was found be smaller than the other subscales and was negatively correlated, $p < .01, r = -.295$. A teacher who is absorbed at work has a hard time being separated from the job because of the fulfilment that comes from teaching. The teacher is happy when working intensely at the job. When compared to the vigor and dedication subscales of engagement, the teacher who is absorbed in his/her work will be least likely to leave the job. The teacher who has energy and is enthusiastic about teaching, along with feeling like going to work and being proud of what the job entails, is more likely to have less thoughts of turnover intention. Overall, the Pearson correlation coefficient values indicated that as work engagement increases, turnover intention decreases.

H2: Job Satisfaction and Work Engagement Predict Turnover Intention

$R$ squared is the goodness-of-fit of a model in multiple regression and indicates the amount of variance in the dependent variable that the independent variables explain. The $R$-
squared will provide evidence of the relationship between the model and the dependent variable on a scale of 0-100% (Colin Cameron & Windmeijer, 1997). The independent variables indicate that for every unit of increase in each of these variables, the outcome variable of turnover intention decreases by the beta coefficient.

Hierarchical regression analysis was used to determine if job satisfaction and work engagement predicted turnover intention. The model summary for the hierarchical regression analysis is presented in Table 12. Model 1 was a job satisfaction only model, which included the both intrinsic and extrinsic job satisfaction. Model 1 was statistically significant \( [F (2, 246)] = 82.436, p < .001 \). Together, intrinsic and extrinsic job satisfaction accounted for 39.6% of the variance in turnover intention.

Table 12

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.633&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.401</td>
<td>.396</td>
<td>.401</td>
<td>82.436</td>
<td>2</td>
<td>246</td>
<td>.000</td>
</tr>
<tr>
<td>Model 2</td>
<td>.646&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.417</td>
<td>.405</td>
<td>.016</td>
<td>2.217</td>
<td>3</td>
<td>243</td>
<td>.087</td>
</tr>
<tr>
<td>Model 3</td>
<td>.647&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.419</td>
<td>.400</td>
<td>.002</td>
<td>.268</td>
<td>3</td>
<td>240</td>
<td>.848</td>
</tr>
</tbody>
</table>

Note: a.) Predictors: (Constant), Job Satisfaction-intrinsic, Job Satisfaction-extrinsic; b.) Predictors: (Constant), Job Satisfaction-intrinsic, Job Satisfaction-extrinsic, Work engagement-vigor, dedication, and absorption; c.) Predictors: (Constant), Job Satisfaction-intrinsic, Job Satisfaction-extrinsic, Work engagement-vigor, dedication, absorption, gender, age, and years of experience; Dependent Variable: Turnover Intention

Model 2 included all of the independent variables: job satisfaction-intrinsic, job satisfaction-extrinsic, work engagement-vigor, work engagement-dedication, and work engagement-absorption. Model 2, included the following variables: job satisfaction-intrinsic, job satisfaction-extrinsic, work engagement-vigor, work engagement, dedication, and work engagement-absorption. When work engagement was added to the model, it was not statistically significant \( [F (3,243)] = 2.217, p = .087 \). The change in variance was only 1.6%.
Model 3 included job satisfaction and work engagement variables as well as the demographic variables of gender, age, and years of experience. The R squared change indicated that work engagement and the demographic variables did not provide a substantial increase in the shared variance percent with the job satisfaction subscales. The change in the model was not statistically significant \( F (3,240) = 0.268, p = .848 \). The demographic variables did not have any significant variance in the model with a small change in variance of only 0.2%. Adding the demographic variables into the model had an almost negligible increase in the shared variance.

Table 13

*Model Summary for Beta (β) Weights and Structure Coefficients*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>Structure Coefficients</th>
<th>Squared Structure Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction-Intrinsic</td>
<td>-.116</td>
<td>-.819**</td>
<td>.671</td>
</tr>
<tr>
<td>Job Satisfaction-Extrinsic</td>
<td>-.456</td>
<td>-.953**</td>
<td>.908</td>
</tr>
<tr>
<td>Work Engagement-Vigor</td>
<td>-.100</td>
<td>-.699**</td>
<td>.489</td>
</tr>
<tr>
<td>Work Engagement-Dedication</td>
<td>-.084</td>
<td>-.633**</td>
<td>.401</td>
</tr>
<tr>
<td>Work Engagement-Absorption</td>
<td>.021</td>
<td>-.459**</td>
<td>.211</td>
</tr>
<tr>
<td>Gender</td>
<td>-.037</td>
<td>-.114</td>
<td>.130</td>
</tr>
<tr>
<td>Age</td>
<td>.003</td>
<td>.054</td>
<td>.003</td>
</tr>
<tr>
<td>Years of experience</td>
<td>-.030</td>
<td>-.018</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Note: p < .01**

The beta weights and structure coefficients for the predictor variables are listed in Table 13. All of the standardized beta weights are negative, except for work engagement-absorption and the demographic variable, age. Only job satisfaction-extrinsic was statistically significant at the \( p < .01 \). For this reason, I also investigated the structure coefficients as these statistics provide more about the predictions from each of the predictor variables (Courville & Thompson, 2020).
For every one-unit increase in a predictor variable, the outcome variable will decrease by the beta coefficient variable. Reviewing the beta weights and the structure coefficient indicators, there were no suppressor variables in this model. Squaring of the structure coefficients concluded that job satisfaction-extrinsic had the most influence on the variance of the outcome variable.

H3: Work Engagement Moderates the Relationship between Job Satisfaction and Turnover Intention

A moderator variable will affect the direction of the relationship between a predictor variable and a dependent variable. In this study, the moderator was work engagement and the predictor was job satisfaction. The sample size was n = 250, following listwise deletion of missing data.

The interaction effect of the independent variables on the outcome variable was first determined for overall job satisfaction and overall work engagement. The results of the interaction effect was an R squared change = .001 and not statistically significant. Examination of the squared structure coefficient determined that the result of the interaction effect is 91% of the 39% variance explained, but this value did not tell the researcher any new information because the R squared did not increase. Even though the interaction effect was a good predictor, it overlaps with job satisfaction and work engagement; therefore, there was not a useful moderator effect. The model does not demonstrate a moderator relationship between job satisfaction and turnover intention.

Further exploration by analyzing the interaction effect between each of the variables, concluded that there was not a significant change in the R squared; therefore, no interaction effect took place within the model. The reported beta weights, square structure coefficients, and the R square change when interaction effects are added are in Table 14.
Table 14

Model Summary for Beta (β) Weights, Structure Coefficients, and Interaction Effects

<table>
<thead>
<tr>
<th>Interaction Variable</th>
<th>β</th>
<th>Structure Coefficients</th>
<th>Squared Structure Coefficients</th>
<th>R Squared</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Job Satisfaction x Overall Work Engagement</td>
<td>-.196</td>
<td>-.953**</td>
<td>.908</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction-Extrinsic x Work Engagement-Vigor</td>
<td>.030</td>
<td>-.976**</td>
<td>.953</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction-Extrinsic x Work Engagement – Dedication</td>
<td>-.416</td>
<td>-.993**</td>
<td>.986</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction-Extrinsic x Work Engagement – Absorption</td>
<td>-.374</td>
<td>-.974**</td>
<td>.945</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction-Intrinsic x Work Engagement – Vigor</td>
<td>-.294</td>
<td>-.812**</td>
<td>.659</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction-Intrinsic x Work Engagement – Dedication</td>
<td>-.324</td>
<td>.943**</td>
<td>.889</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction-Intrinsic x Work Engagement – Absorption</td>
<td>-.301</td>
<td>-.901**</td>
<td>.812</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

Note: p < .01**

Summary

Several statistics were used to analyze the data from this research. Cronbach’s alpha was analyzed for all of the variables. The alpha results were all between .70 and .95, which are acceptable values (Tavakol & Dennick, 2011). The demographic survey question results were explained. The descriptive statistics were compiled and charted.

Hierarchical regression analysis concluded that the shared variance of job satisfaction with turnover intention was 39.6%. In other words, job satisfaction accounts for 39.6% of the variation in turnover intention. When work engagement was added to the model, the shared variance only increased by 1.6%. Further evaluation of the variables by interaction effects determined that work engagement did not moderate the relationship between job satisfaction and turnover intention. The conclusions found by this study determined that when job satisfaction is high, turnover intention is low. When work engagement is high, turnover intention is low. These
results are discussed further in Chapter 5. Implications for future research on job satisfaction and work engagement of health science teachers are also discussed.
CHAPTER 5
DISCUSSION AND CONCLUSION

The purpose of this study was to investigate if a relationship existed between job satisfaction, work engagement, and turnover intention of health science teachers. The research was conducted through online surveys sent to health science teachers within the state of Texas who had held a health science teaching position for at least one year.

Data was collected from 250 health science teachers who volunteered to complete the survey. The teachers were given an opportunity for a chance to win a $20 Amazon gift card. For every 20 participants, a gift card was awarded through the Amazon online email system. Most teachers were female, 45–54 years old, had at least a bachelor’s degree, one to three years of teaching experience, and most of the participants were HOSA-Health Care Professionals advisors. A large percentage of the teachers taught the introductory course, Principles of Health Science, along with one of the capstone courses, Practicum in Health Science. The average teaching salary was approximately $50,000 to $59,999, with 38% of the teachers working in their health care certification field as well.

The following research questions guided the study:

1. What are the relationships between job satisfaction, work engagement, and turnover intention of health science teachers?
2. Do job satisfaction and work engagement predict turnover intention of health science teachers?
3. Does work engagement moderate the relationship between job satisfaction and turnover intention?

A survey research design was created to investigate the research question and subsequent hypotheses. Data was collected using the online survey software, Qualtrics©. The survey was composed of the Weiss et al. (1967) Minnesota Satisfaction Questionnaire (MSQ), the short
version, Schaufeli, Bakker, and Salanova’s (2006) Utrecht Work Engagement Scale (UWES-9); and Cammann et al.’s (1979) turnover intention subscale of the Michigan Assessment of Organizations Questionnaire. The questionnaire consisted of 41 questions including the demographic questions (see Appendix C).

The data was analyzed using several types of analysis to address the research questions and hypotheses. CFA was performed to conclude that the scales are valid and a relatively good fit of the data was demonstrated in the research model. The mean and standard deviations were used to summarize the data. Pearson’s correlation coefficient was used to determine the presence and strength of the relationship between the variables. Hierarchical multiple regression analysis was performed to determine the contribution of each of the independent variables (job satisfaction and work engagement) predicting the outcome variable of turnover intention. Interaction effects were analyzed to determine if work engagement was a moderator of job satisfaction and turnover intention.

Discussion

The paragraphs in this section discuss the findings of this research, the relationships between job satisfaction, work engagement, and turnover intention of health science teachers.

Job Satisfaction

Job satisfaction is one of the most studied topics in today’s organizational psychology literature (Elfstrand et al., 2017; Judge et al., 2017). The Herzberg two-factor theory of job satisfaction was influential to these studies and still is today (Judge et al., 2017). The theory included job characteristics such as motivational factors for promotion, work relationships,
responsibility, and recognition (Hauff et al., 2015; Mottaz, 1985). These ideas were included in Herzberg’s theory of intrinsic factors (motivators) and external factors (hygiene). The Minnesota Satisfaction Questionnaire used in this study supported the Herzberg motivation/hygiene theory (Hirschfeld, 2000).

Hancer and George (2003) analyzed job satisfaction of 798 employees from a regional restaurant chain in the United States. The MSQ was used in the survey and supported by the Herzberg theory. The study found that the major source of job satisfaction for the restaurant workers was from the intrinsic job satisfaction. This study confirmed the findings of Hancer and George’s (2003) research, in that, the correlation coefficient relationship between intrinsic and extrinsic job satisfaction was positively strong. Different aspects of the work environment either satisfies or dissatisfies the needs of employees.

In this study, teachers were more intrinsically satisfied than they were extrinsically satisfied. The higher mean score (4.04) for intrinsic job satisfaction implies that teachers find the work itself to be intrinsically rewarding and are motivated by good working relationships, autonomy, a good work environment, and the chance to tell people what to do. Although teachers are both intrinsically and extrinsically satisfied on the job, they are less driven by the hygiene factors or extrinsic satisfaction. Hygiene factors include salary, rewards, benefits, proficient supervision, competent administration, a good work environment, and work relationships (Herzberg, 1971). From the MSQ, which was measured on a Likert scale with 1 being not satisfied and 5 being extremely satisfied, it was found that almost one-third (31.6%) of teachers were only somewhat satisfied with salary. Even though teachers are not altogether satisfied with their salary they are more satisfied when given a “change to do things for other people” (46.6%) and “the chance to do something that makes use of my abilities” (44.8%). This
demonstrated to the researcher that even though the teachers were not fully satisfied with the salary, the teachers were far more satisfied with helping students and colleagues and using the knowledge and skills from the healthcare profession to teach to others. Both of these attributes contribute to teaching the knowledge and skills to the students about the healthcare profession.

The Relationship between Job Satisfaction and Work Engagement

Overall, the relationships between extrinsic and intrinsic job satisfaction and all the work engagement subscales were moderately positive. However, the absorption subscale of work engagement showed a weak relationship with extrinsic job satisfaction at .284. This means that factors that trigger extrinsic satisfaction, such as competency of the supervisor, company policies, and recognition, do not have a strong impact on how absorbed teachers are in their job roles. Teachers who are absorbed are immersed in the work, happily performing the work, and become carried away with the work; these describe internal characteristics of a teacher.

The Relationship between Job Satisfaction and Turnover Intention

Turnover intention and the relationship to job satisfaction has been studied over the last several decades. Mobley (1982) theorized that an employee has intent to leave a job when the employee has experienced job dissatisfaction.

The relationship between overall job satisfaction and turnover intention was negative as demonstrated by the Pearson $r$ correlation coefficient. This finding was supported by previous research by Liu and Ramsey (2008) that teachers were most dissatisfied with working conditions and the pay scale in the United States. When teachers are dissatisfied, they leave the profession. Skaalvik and Skaalvik (2011) also found that motivation to leave the teaching profession was negatively related to job satisfaction. Increasing job satisfaction will decrease or reduce turnover
intention for teachers (Ingersoll, 2001). Thibodeaux et al. (2015), using the Herzberg theory, surveyed teachers in five school districts along the southern coast of the United States. The researchers found that lack of support from leadership led to job dissatisfaction and turnover intention of the teachers.

Furthermore, in their study, Kabungaidze et al. (2013) concluded that there was a negative relationship between job satisfaction and turnover intention. It is important for school district administration to increase job satisfaction by creating strategies to keep teachers in the classroom. For example, school administrators and leaders should recognize and reward teachers for high performance, engender positive work environments, encourage peer and supervisor support, and empower teachers with increased and challenging responsibilities.

The current study findings supported the Herzberg (1971) theory of extrinsic and intrinsic job factors. Herzberg found that when job satisfaction increased, employee turnover decreased. Derby-Davis (2014) studied a group of nursing faculty in the United States, testing the validity of the Herzberg theory. The study found that factors affecting job satisfaction were noteworthy to reduce turnover intention and increase job satisfaction.

Work Engagement

In the last 10 years, work engagement has become a topic of interest for practitioners and researchers (Saks & Gruman, 2014). Research has shown that half of the United States workforce is not totally engaged in the work, leading to a loss of productivity (Kowalski, 2003). This study was supported by the JD-R model. The theory contained two processes that affect work engagement: job demands and job resources (Schaufeli et al., 2002). Job demands include work overload and work related stress, while job resources include professional development and wages to motivate employees (Schaufeli et al., 2002).
Studies using the JD-R model included a study of health care workers in 200 healthcare facilities in the United States (Shuck et al., 2014). The study found when the employees were supported through job resources such as challenging work and professional development, employee engagement existed (Shuck et al., 2014). Kim (2017) determined through a study of private sector organization participants that when employees are engaged at work, productivity increased.

The UWES-9 work engagement survey was used to analyze engagement levels of health science teachers. Findings indicated that most teachers were “very often” to “always” engaged at work. Of the three subscales, work engagement-dedication stood out with the highest mean score (5.75). The mean score for work engagement-dedication was 5.75. This means that teachers are generally enthusiastic about their work, they are inspired by their job, and take pride in what they do. Of the three work engagement subscales, work engagement-vigor had the lowest mean score (5.19). Teachers tend to feel that they are not as strong and vigorous on the job.

The Relationship between Work Engagement and Turnover Intention

The subscales of work engagement-vigor, dedication, and absorption were examined and found to be negatively correlated with turnover intention, suggesting that as work engagement increases, turnover intention decreases. The work engagement survey results concluded that the teachers have a strong work engagement in the field of health science.

The result of this survey is supported by the work engagement research reported in the past. People engaged in their work are proactive, take initiative, and look for quality in their work (Bakker et al., 2011). Skaalvik and Skaalvik (2011) determined that when teachers have a lack of motivation, work engagement is affected. The quality of teaching suffers and teachers
will leave the profession before the third year of teaching (Skaalvik & Skaalvik, 2011).

Faculty development through continuing education also leads to positive work engagement and decreases turnover intention (van den Berg, Mastenbroek, Scheepers, & Jaarsma, 2017; Clarke, 2012). Clarke (2012) studied the retention of health science teachers in North Carolina and found that continuing education is an important tool for increasing work engagement and decreasing turnover intention. A study of career and technical education teachers found that high levels of work engagement led teachers to a greater commitment to the school district (Song et al., 2013).

Turnover Intention

Turnover intention was measured using the Michigan Organizational Assessment Questionnaire (MAOQ) subscale of turnover intention. The Likert scale consisted of three questions, with 1 being strongly disagree and 7 being strongly agree. The mean of these three survey questions was 3.49, which fell in between “slightly disagree” and “neither agree or disagree”. The question with a mean of 3.62 was “I often think about quitting” and the question with the lowest mean was “I will probably look for a new job next year”. Teachers may think about quitting and may have thoughts about looking for a job soon but overall they are not interested in quitting per say but have more neutral intentions to leave the job.

Job Satisfaction, Work Engagement, and Turnover Intention

Hierarchical regression analysis was conducted to predict the impact of job satisfaction and work engagement on turnover intention. Findings showed that both intrinsic and extrinsic job satisfaction accounts for 39.6% of the variance in turnover intention. When work
engagement was added to the model there was a 1.6% increase in the shared variance of turnover intention. This model did prove that job satisfaction and work engagement predict turnover intention. There were no interaction effects; therefore, work engagement was not a moderator of job satisfaction and turnover intention.

Work engagement and job satisfaction both play a role in turnover intention and this study confirmed findings from previous research. All of the independent variables were negatively correlated with turnover intention. This indicated that when teachers are engaged and satisfied with their job, turnover intention decreases. Work engagement and job satisfaction lead to low turnover intention (Schaufeli et al., 2002; Schaufeli & Bakker, 2004; Saks, 2006; Bakker et al., 2011).

When a person is immersed in their work, happy, and enthusiastic about performing their job roles (Bakker, 2011; Schaufeli & Bakker, 2004), turnover intention thoughts decreased. Research has demonstrated this concept, which has been widely documented. Employees engaged in their work will have an increased level of job satisfaction (Schaufeli, 2018). When employees are engaged at work there is positive employee relations, organizational stability, and the cost of recruitment and retention decreases (Saks & Gruman, 2014). Past research supported that as work engagement increased, job satisfaction increased and turnover intention decreased (Kulikowski, 2017; Skaalvik & Skaalvik, 2011; Bakker et al., 2005).

Implications for Research

The findings of this research have implications for continued research into turnover intention of health science teachers. The leadership of the career and technical education in the secondary education arena may hold the key to success and retention of health science teachers.
Leaders must recognize the needs of these healthcare professionals in the classrooms. Work engagement success includes autonomy, creativity, pride in one’s own work, and dedication to the work itself (Schaufeli, 2018). When leadership recognizes how important these attributes are for health care professional teachers to be engaged in the job, they will promote the positive work environment and decrease turnover (Sousa, 2017).

Research into the causes of turnover intention and creating strategies to retain teachers will promote student success. Turnover affects the teacher, students, families, school districts, and the community. Decreasing turnover intention can lead to increased job satisfaction for teachers and successful students, leading to successful school districts. This type of research will not only benefit health sciences, but also other career and technical areas of education. Teachers in the other career clusters, as defined by the United States Department of Education may benefit from the findings. The other career clusters include: Agriculture, Food and Natural Resources; Architecture and Construction; Education and Training; and Law, Public Safety, Corrections, and Security.

Possible future studies may include face-to-face interviews with health science teachers to gain more rich perspectives on the topic. From this research, it was found that the majority of the teachers who participated in the study had only 1 to 3 years of experience. Interviewing the teachers with more experience would add additional information critical to the success of the teacher in the health science classroom. Teacher conferences provide a great opportunity for face-to-face interviews and encourages completion of survey questions.

Future studies should also conduct further investigation of work engagement as a moderator variable. More studies have examined work engagement as a mediator between job satisfaction and turnover intention, but work engagement has not been extensively studied as
moderating the relationship between job satisfaction and turnover intention. This study found that the work engagement did not moderate the relationship between job satisfaction and turnover intention.

Research including healthcare professional educators, both secondary and postsecondary, should lead to studies that include work engagement and the well-being of the professional (van den Berg et al., 2017). The monitoring of the well-being of the health professions educators has become an additional topic with work engagement success and job satisfaction (van den Berg et al., 2017). The well-being and positive work engagement lead to job satisfaction and promotes retention of the healthcare professional in the education arena.

Past research indicated that when employees are engaged in the work, job or task, job satisfaction occurred and the thought of turnover intention decreased (Kulikowski, 2017; Skaalvik & Skaalvik, 2011; Bakker et al., 2005). The findings of the current study indicated that as work engagement and job satisfaction increase, turnover intention decreased. Future research could broaden these findings by adding constructs, such as leadership in school administration, job resources, and other factors that may contribute to the satisfaction and engagement levels of teachers.

Implications for Practice

This study resulted in an increase in understanding the importance of having an engaged teachers in the classroom. The current study found that most teachers surveyed were satisfied with the teaching position. Interestingly, the majority of teachers participating in the study had taught for an average of one to three years. Retaining teachers after three years may be a problem. Prior research also shows that about 25% of new teachers in the United States leave the teaching profession before the third year on the job (Skaalvik & Skaalvik, 2011). Measuring
engagement of teachers in the classroom can reduce the amount of turnover. When the workforce is not engaged, turnover intention increases (Skaalvik & Skaalvik, 2014). Administrators play a key role in the success of the classroom teacher through the provision of necessary job resources and a healthy work environment.

Currently, the Texas Education Agency supports several conferences for the career and technical education health science teacher (Texas Education Agency, TEA, 2018). These venues include summer professional development conferences with a new teacher orientation. The summer professional development conference also offers many sessions for the seasoned health science teacher. These teachers conferences are may be resourceful in retaining teachers and ensuring they are satisfied on the job.

The ultimate goal of a health science teacher is to promote the health care fields to students and to ensure they are certified before graduation. For example, many students earn the certified nurse aide or phlebotomy skills before graduation. By doing so, these students are productive citizens of the community. Students are encouraged by the teachers to pursue the degrees in health care such as nursing. The leadership of the school districts should be encouraged to realize the potential for the students’ success by promoting job satisfaction, and work engagement of the health science teachers.

Conclusion

Healthcare is essential for the USA and the world at large. With an aging population, the need for healthcare professionals is growing. Physicians, nurses, medical laboratory scientists, and physical therapists are just a few of the professions that will have a shortage in the coming years (BLS, 2015). Health science teachers at the secondary level can have an impact on the
healthcare professional shortage. With adequate numbers of health science teachers, students can actually graduate from high school with an entry-level certification, providing even more career opportunities to them.

Educational leadership must recognize the value of these healthcare professionals in the classroom. Many of these healthcare professionals are already leaders in the community and provide great public relationships for the school and the community. Educational leadership must embrace these professionals by ensuring that teachers are intrinsically satisfied by supporting good working relationships, autonomy, a good work environment, and the chance to tell people what to do. In addition the provision of excellent leadership, policies, procedures, salary, and advancement are also extremely important for teachers to be extrinsically satisfied on the job. These factors must be addressed for success of the student, teacher, leadership, school district, and the community.
APPENDIX A

UNIVERSITY OF NORTH TEXAS (UNT)

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL
April 18, 2018

PI: Karen Johnson
Study Title: Relationships between Engagement, Job Satisfaction, and Turnover Intention of Health Science Teachers

RE: Human Subjects Application # IRB-18-97

Dear Dr. Karen Johnson:

In accordance with 45 CFR Part 46 Section 46.101, your study titled “Relationships between Engagement, Job Satisfaction, and Turnover Intention of Health Science Teachers” has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

Attached to your IRB protocol are the consent documents with IRB approval. Since you are conducting an online study, please copy the approved language and paste onto the first page of your online survey. You may also use the enclosed stamped document as the first page of your online survey.

No changes may be made to your study’s procedures or forms without prior written approval from the UNT IRB. Please contact The Office of Research Integrity and Compliance at 940-565-4643 if you wish to make any such changes. Any changes to your procedures or forms after 3 years will require completion of a new IRB application.

We wish you success with your study.

Sincerely,

Chad Trulson, Ph.D.
Professor
Chair, Institutional Review Board
CT: jm
APPENDIX B

IRB CONSENT FORM
University of North Texas Institutional Review Board Informed Consent Form

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

**Title of Study:** Relationships between Engagement, Job Satisfaction, and Turnover Intention of Health Science Teachers

**Student Investigator:** Kathleen Park University of North Texas (UNT) Department of Learning Technologies

**Supervising Investigator:** Dr. Karen Johnson, University of North Texas (UNT) Department of Learning Technologies

**Purpose of the Study:** You are being asked to participate in a research study, which involves an online survey to investigate the extent to which teachers’ work engagement and job satisfaction are related to their intent to leave the profession.

**Study Procedures:** You will be asked to complete an online survey that will take approximately 10-15 minutes of your time.

**Foreseeable Risks:** No foreseeable risks are involved in this study.

**Benefits to the Subjects or Others:** This study may benefit the health science field by informing key individuals in administrative roles in career and technical education of ways to improve the retention of health science teachers.

**Compensation for Participants:** By participating in the survey, you will have an opportunity to enter a drawing for a $20 gift card to Amazon. At the end of the survey you will be given the opportunity to complete a separate survey by providing your contact information. For every 20 participants who complete this separate survey, their names will be entered in a drawing. The winners will receive the Amazon gift card. Allow 4-6 weeks for winner notification.

**Procedures for Maintaining Confidentiality of Research Records:** Confidentiality will be maintained to the degree possible given the technology and practices used by the online survey company. Your participation in this survey involves risks to confidentiality similar to a person's everyday use of the internet. However, the system has been set for anonymous responses; therefore, your responses and your IP address cannot be identified.

**Questions about the Study:** If you have any questions about the study, you may contact Kathleen Park, at KathleenPark@my.unt.edu or the supervising investigator, Dr. Karen Johnson, at Karen.Johnson@unt.edu or phone 940-565-3174.

**Review for the Protection of Participants:** This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-4643 with any questions regarding the rights of research subjects.
Research Participants’ Rights: Your decision to participate in this survey indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Kathleen Park has explained the study to you and answered all of your questions.
- You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits.
- The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

For the Student Investigator or Designee:

I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

Please click the green arrow button if you agree to continue to the survey

Please click here if you wish to exit the survey
APPENDIX C

DEMOGRAPHIC SURVEY
Please answer the following questions by circling the correct answer or filling in the blank.

Name (Optional) ________________________________________

Email (Optional) ________________________________________

1. What is your gender?
   • Female
   • Male

2. What is your age?
   • 18-24 years
   • 25-34 years
   • 35-44 years
   • 45-54 years
   • 55-64 years
   • >65 years old

3. What is your highest level of education?
   • Trade or career and technical education
   • Some college credit/no degree
   • Associate’s degree
   • Bachelor’s degree
   • Master’s degree
   • Doctorate degree

4. How many years of teaching experience do you have in health science?
   • 1-5 years
   • 6-10 years
   • 11-15 years
   • 16-20 years
   • >21 years

5. Are you a HOSA-Health Care Professionals advisor?
   • Yes
   • No

6. Check the grade levels in which you are currently teaching.
   ___ Grade 8
   ___ Grade 9
   ___ Grade 10
   ___ Grade 11
   ___ Grade 12
7. Check the health science courses you are currently teaching.
   ___ Principles of Health Science
   ___ Medical Terminology
   ___ Health Science Theory
   ___ Health Science Clinical
   ___ Anatomy and Physiology
   ___ Medical Microbiology
   ___ Pathophysiology
   ___ World Health Research
   ___ Pharmacology
   ___ Health Informatics
   ___ Mathematics for Health Professionals
   ___ Practicum in Health Science
   ___ Extended Practicum in Health Science

8. As a teacher, your annual salary range is:
   • >$80,000
   • $70,000 to $79,999
   • $60,000 to $69,999
   • $50,000 to $59,999
   • $40,000 to $49,999
   • $30,000 to $39,999
   • <$30,000

9. In addition to your teaching, are you currently practicing in your profession using your license, certification or registration?
   • Yes
   • No
APPENDIX D

HEALTH SCIENCE TEACHER PARTICIPANT LETTER
Dear Participant:

You are invited to participate in a research study investigating work engagement, job satisfaction, and turnover intention of health science teachers. I am a doctoral student at the University of North Texas in the Applied Technology and Performance Improvement degree program. I am now conducting research for my dissertation to complete my PhD.

The purpose of this study is to understand how work engagement and job satisfaction relate to turnover intention of health science teachers. Research has shown that, in general, 25% of teachers leave the profession before the beginning of their third year of instruction. Retention of health science teachers is important to the teaching profession and the future of healthcare.

There is a significant shortage of healthcare professionals in the United States. The ten fastest growing occupations, during 2016 to 2026, include home health aide, personal care aides, physician assistants, nurse practitioners, and physical therapist assistants. Employment in the healthcare and social assistance fields is projected to add 4 million jobs by 2026, according to the Bureau of Labor Statistics (BLS, 2016). With this in mind, we need teachers from the healthcare professions to bring their expertise into the health science classroom, to educate and prepare students for these important job opportunities.

Your participation will be a significant contribution to the study. I very much appreciate your participation and it is voluntary. Your decision to participate will not affect your relationship with the University of North Texas, nor with your current employer. There are no risks, either psychological or physical, to participating in this study. The information will only be reported as aggregate summaries and no individual information will be reported.

Results will be shared with the Texas Education Agency regarding the outcomes of the relationship of turnover intention to work engagement and job satisfaction as a means to help improve teacher retention. Again, the results will remain confidential.

By participating in the survey, you will have an opportunity to enter a drawing for a $20 gift card to Amazon. At the end of the survey, you will be given the opportunity to complete a separate survey by providing your contact information. For every 20 participants who complete this separate survey, their names will be entered in a drawing. The winners will receive the Amazon gift card. Allow 4-6 weeks for winner notification.

If you have any questions, feel free to contact me at 409-656-2963 or email me at KathleenPark@my.unt.edu. You may also contact my advisor, Dr. Karen Johnson at email Karen.Johnson@unt.edu or phone 940-565-3174 (office).

I look forward to receiving your response. Thank you in advance for your participation in this research study.

Sincerely,

Kathleen A. Park
APPENDIX E

DEMOGRAPHIC RESULTS
<table>
<thead>
<tr>
<th>Demographic</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
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<tr>
<td>Male</td>
<td>10.4%</td>
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<tr>
<td>Female</td>
<td>89.6%</td>
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<tr>
<td><strong>Age</strong></td>
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<tr>
<td>Age 24 or younger</td>
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<td>25-34 years of age</td>
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<td>45-54 years of age</td>
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<td>55-64 years of age</td>
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<td>65 years of age or older</td>
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<tr>
<td><strong>Level of Education</strong></td>
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<td>Doctorate degree</td>
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<tr>
<td>Career and technical</td>
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<tr>
<td>Other</td>
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<tr>
<td><strong>Years of Teaching Experience</strong></td>
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<tr>
<td>1-3 years</td>
<td>28.7%</td>
</tr>
<tr>
<td>4-6 years</td>
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<tr>
<td>7-10 years</td>
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<tr>
<td>11-20 years</td>
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<td>21 years or more</td>
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<td><strong>HOSA-Health Care Professionals Advisor</strong></td>
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<td>Grade 8</td>
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<td>Grade 9</td>
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<td>Grade 10</td>
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<td>Principles of Health Science</td>
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<tr>
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<tr>
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<td>Health Science Theory</td>
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<td>Health Science Clinical</td>
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<tr>
<td>Demographic</td>
<td>Results</td>
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<td>-------------------------------------</td>
<td>---------</td>
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<td>Medical Microbiology</td>
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<tr>
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<td>3.6%</td>
</tr>
<tr>
<td>$29,999 or less</td>
<td>0.4%</td>
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REFERENCES


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